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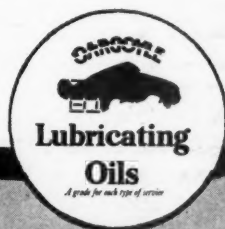
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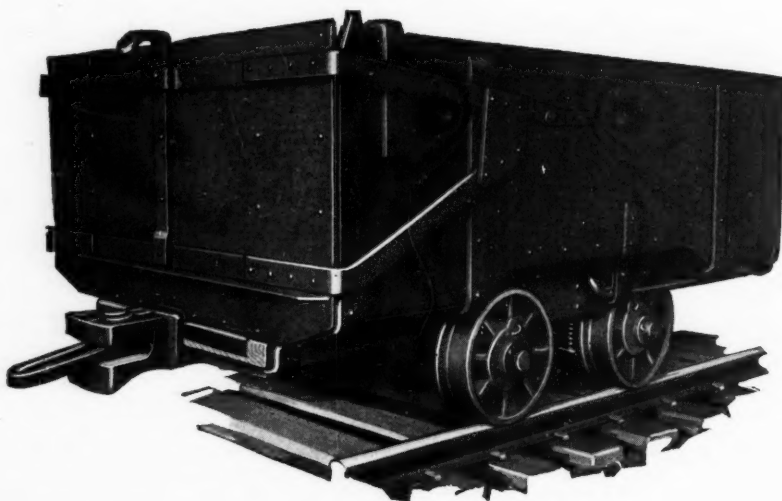
***"Everybody talks about the weather—
but nobody does anything about it!"***

MARK TWAIN'S criticism might at one time have been truthfully applied to the Coal industry—but no longer. Thought and talk and discussion are producing sound, conservative plans, destined to bring about profitable operation through lower production costs.

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Coal by Flume

IN NEW ZEALAND they are setting the world a pace in the transportation of coal by flume through hilly country. The Westport Stockton Coal Co., Ltd. has built such an "airline" five and three quarters miles long from a mine to the railroad where the coal is sized and shipped while the water, originally drawn from a conservation reservoir in the hills, is allowed to flow into the river which is its natural outlet to the Pacific. The story of the enterprise is in next week's *Coal Age*.

THE FLUME, a wooden trough lined with cast-iron sheets, traverses deep gullies on high trestles and bores through four tunnels. Its construction was a job fraught with many difficulties and entailed a good deal of expense. But the saving in the cost of hauling the output of the mine down through the rough country to the railroad is great. About 150 tons of coal per hour can be moved at a speed of 8 or 10 m.p.h. There are places in this country, notably in the anthracite fields, where fluming of coal has been talked of but never practiced. The New Zealand installation may inspire Americans to action.

DOWN IN ALABAMA during the past year there have been some notable improvements in coal mining plants. Some companies have been spending money in order to save it. The DeBardeleben Coal Co. is one of these. A description of what it has done at its Empire Mine will appear in next week's issue. Prof. H. S. Newins, of Pennsylvania State College, tells *Coal Age* readers some interesting things about how coal companies are growing at least a part of the 2½ million cords of wood they use annually.

production. The public wants a definite assurance of an uninterrupted supply of coal. Arbitration when direct negotiations fail is the only way yet suggested by the wisdom of man which will give that assurance.

There are public rights in the present controversy which neither operator nor miner may dismiss without inviting disaster. Both sides have appealed persistently for public support and sympathy. In effect, if not in words, the anthracite operators have asked the public to put up with the discomforts and the inconveniences of the strike as the price the public should pay to outlaw future strikes. The public is carrying out its part of the bargain in good faith and, for the most part, with good humor. The operators can afford to do no less.

Studies of Lung Diseases and the Coal Miner

IN R. R. SAYER'S new bulletin on "Silicosis Among Miners" the coal mining fraternity will find only sources of congratulation. The coal miner seems not only not to be subject to the disease but also to acquire a modified immunity from it. "Men," says Dr. Sayers, "who have worked in certain coal mines for several years seem to be less susceptible to silicosis than the average man. According to some investigators, animal experiments indicate that coal dust has this effect."

The use of the word "certain" seems, however, to be more than the scientist's habitual caution. A tabulation shows that in Colorado, Indiana and Missouri the average coal miner is less susceptible to tuberculosis, so called, than the general population and still less so than metal miners. In Illinois the average coal miner is shown to be a trifle more subject than the general public to tuberculosis, but the difference is so slight that it may prove nothing. However, in the northern part of Illinois is a number of mines where much brushing is done because the coal is thin, and perhaps—this is merely supposition—this may explain why Illinois rates are being less favorable than those of the other states named. But Missouri is also a thin-coal state with much rock brushing and bottom lifting, so here again a question arises. What gives the Missouri coal miner his low tuberculosis rate? Perhaps the nature of rock brushed or lifted.

Influenza is less rife among coal miners than among the general public in Colorado and Illinois. In Indiana and in Missouri, a state with low coal and much brushing, this disease is far more prevalent, the ratio in Missouri being roughly two to one and in Indiana seven to four. Pneumonia among coal miners in all four states is less prevalent than among the general public. Where much rock work has to be done and much free silica is in the rock, and especially where the work is done by machine drills, the coal miner doing the same kind of work as the metal miner is subject in that measure to his risks.

Waning of Coal as Heating Fuel

AS BEARING upon the question of the future use of coal for heating purposes, it is estimated by a real-estate expert that around 25 or 30 per cent of the buildings in New York have changed their heating fuel from coal to petroleum, a change that has come about in the last two years. Most of the new apartment

houses are installing petroleum heating systems, thereby avoiding the very considerable problem of disposing of ashes. Of the older buildings, the Equitable Building, as an example, has changed entirely to petroleum as a fuel for heat and power. This is a tendency which coal producers must visualize squarely in planning the future marketing of their product. Apparently the only way that it can be partially checked is by a substantially lower price for coal.

Cheaper Coal and Larger Tonnage

AS THE RESULT of coal shortages and resulting high prices, consumers have learned to burn their fuel more economically. In consequence, the demand for coal has not progressively increased at its former rate. Will decreased prices, due to lower wages and greater mechanical efficiency in mines, secure the business that has been lost? There are many reasons to believe that they will, though there are some factors which may interfere.

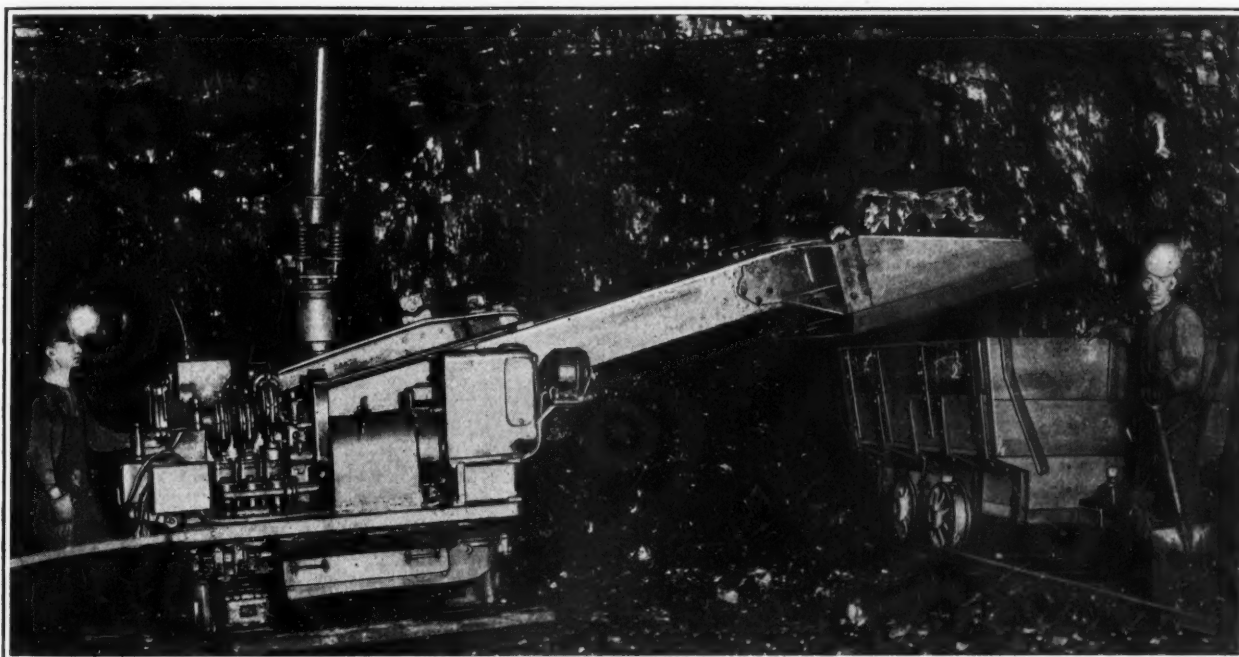
If regulation of public utilities should take into consideration lower fuel costs as a basis for reducing rates on power, some reduction may actually result; not much, however, since the greater part of the gross revenue of power companies is allowed by the bodies that regulate them because of the interest cost on installation and the cost of its maintenance, and not because of the expenditure for coal. Hence, it appears likely that there will not be sufficient lowering of electricity rates to greatly stimulate thereby the coal industry.

But there are new possibilities in the development of heating by steam. Private garages that are now unheated will doubtless in time be provided with artificial heat. When that is done, the car will be ready at all times to start out without the delays which are so aggravating to motorists who have a cold garage. Private greenhouses are a less important example of fields that may be expanded. They are more numerous in European countries than in the United States. Both the purchase and culture of greenhouse flowers are extravagances so long as coal is costly; but with a decrease in cost of heating the demand for coal will increase. The farmer, also, may gradually forsake the stove and heat his whole house with a furnace; if a lower price for coal should offer an incentive.

Lowered coal costs will inevitably in short, result in increased coal sales; and, concurrently, general industrial expansion will eventually aid the curve of coal output to move upward.

Public Responsibility for Mine Safety

ACCIDENTS in coal mines are a matter of public as well as private responsibility; accordingly it becomes essential to ascertain what means can be taken to make mines as safe as possible. In order to avoid needless multiplication of effort, it is best to have the work performed by a single, adequate staff of men such as that of the U. S. Bureau of Mines. Since foreign nations have similar problems, it is well to arrange for co-operation, so as to make the information of one nation available to all. This is being done; Great Britain is now co-operating with the United States; and in time France, Belgium and Germany may pool their efforts with ours in a common endeavor to prevent the toll of life that mining coal levies.



Big Wyoming Mine Now Completely Mechanized

Acme Gets Nearly 200 Tons per Day from Loading Machines in Wide Work and 160 Tons in Entries—Ideas in Haulage and Shooting Are Perfected

By Harry N. Taylor

President Sheridan-Wyoming Coal Co.

CONVERTING the Acme mine, a 3,500-ton operation in Wyoming, from a hand-loading operation to one completely mechanized even to its drilling was accomplished last summer by the Sheridan-Wyoming Coal Co. with a sufficient degree of success to make the story of the mine's performance since then interesting to the coal mining fraternity. In a 47-ft. seam of coal the middle 11 ft. is mined with certain changes from the shooting and haulage system previously used so that today eight Goodman shoveling machines load the entire output of rooms while four Joys handle all coal mined in entries and room necks and put in part of their time in rooms. During last November the Goodmans averaged 196.75 tons per day and the Joys 160.8 tons. It is hoped, with further experience, to raise these outputs. More machines are to be added soon so that the daily capacity of the mine can be increased about 1,000 tons.

After the company had fully decided to install machines in the mine, the next step was to prepare the operation for mechanical loading. As no large mines in northern Wyoming were completely equipped with mechanical loaders, there was no opportunity to profit by the experience of others. As a result, it was necessary for the management to work out a system suitable to the loaders that were to be installed.

The chosen mine employed about 275 loaders. The bed has an average rise to the northwest of about 2

per cent. This pitch is not regular, and in some places frequently runs as high as 6 per cent. The work is laid out so that the rooms are driven to the rise, thus avoiding trouble from water.

Horses were formerly used for gathering at the face, and as gathering locomotives were to serve some of the loaders, it was found necessary to rearrange practically all the panel entry and room track in the mine. Twelve-foot room switches had formerly been used. It was found that it was necessary to lengthen these to 16 ft. on account of the longer wheel-base used on gathering locomotives and loading machines. It was decided to lay the mine out in three machine sections, putting four machines in each section, with a foreman in charge of that particular group of machines. Heavy steel and trolley wire were extended into these sections, and a 25-car parting installed in each panel.

In order to expedite the work of installing the machines, the mine was closed down, and all hand-loading was stopped. The work of rearranging the track, extending the haulage, and putting in partings, was begun on June 1. It was decided to install two types of loaders—eight Goodman power shovels for loading room coal, and four 5 BU Joy machines for driving entries and room necks.

It was decided also, after a fair trial, that the best method suited to existing conditions for serving the loading machines was to put a 5-car parting in each room—as shown in Fig. 1. It also was found that the quickest and most effective means for changing cars at the loader was to keep a horse or mule at this parting. As soon as a car was loaded, it was dropped down onto the parting where the grade is suitable, and

In the headpiece is shown the type of loading shovel that is used in the rooms. Eight men normally constitute the crew, including undercutter machine men, locomotive driver, shot-firers and the like. During the month of November last these machines averaged almost 200 tons per shift each. By enlarging the mine cars on hand this increased production was handled efficiently.

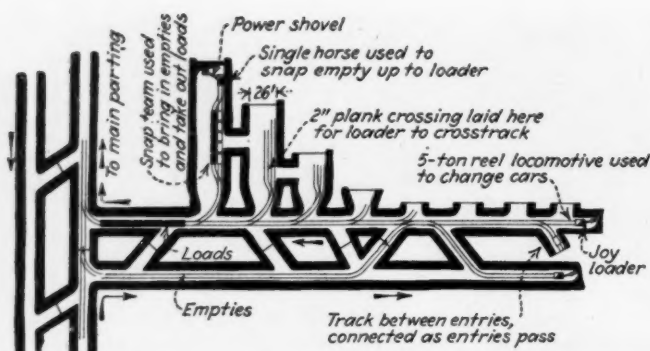


Fig. 1—Detail of Parallel Headings with Rooms Turned

In each room a 5-car parting is provided to eliminate waiting for cars. This is highly important since in order to attain their greatest efficiency loading machines must be kept busy. The headings form practically a parting for the machines that are engaged in driving these narrow passages.

an empty pulled to the machine with the horse. The distance from the machine to the room parting is short, so that little time is required to make such a change.

A machine that is driving an entry and turning room necks has to be served somewhat differently. The gathering locomotive usually handles a trip of five cars, and as soon as one car is loaded by the machine, it moves out, and kicks the load into the switch, returning the empties to the machine. It is intended to finish up the panels already started or near the boundary on the present system. All new panels will be driven 16 ft. wide, and double track laid in the entry. This will enable the gathering locomotive to serve the machine in the entries without interfering with cutting machines, or other work which is being carried on in the same passage. The arrangement of the proposed new panels is also shown in Fig. 2. Panel entries hereafter will be driven on 450-ft. centers. This will make a 350-ft. room instead of one 250 ft. long as was used with the hand-loading method. With mechanical loading, rooms are worked out much faster than with hand work; hence longer rooms are advantageous.

Coal in this mine runs approximately 47 ft. thick, but only about 10 or 11 ft. of this is taken in the advance. Rooms were formerly driven 22 ft. wide with

crosscuts and entries 12 to 14 ft. wide. It was found that the loading machine would not work satisfactorily in this width of room, and the rooms accordingly were widened to 26 ft., the center distance being increased proportionately. The track, as a rule, is carried along the right-hand rib. This arrangement affords the machine ample room in which to operate and swing its load from the face to the mine car.

This mine has a soft fireclay floor. This gave the machine considerable trouble in moving into and out of rooms, and also while operating, because of the loaders' excessive weight. In order to eliminate this difficulty it was decided to leave not less than one foot

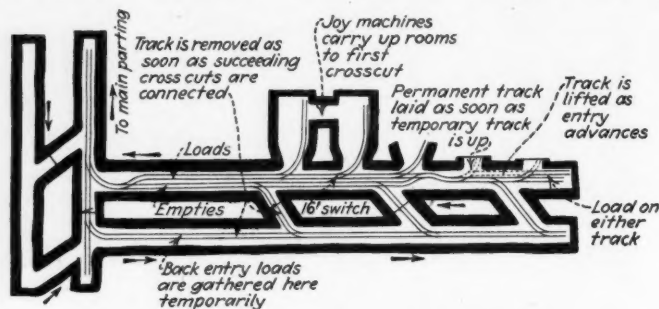
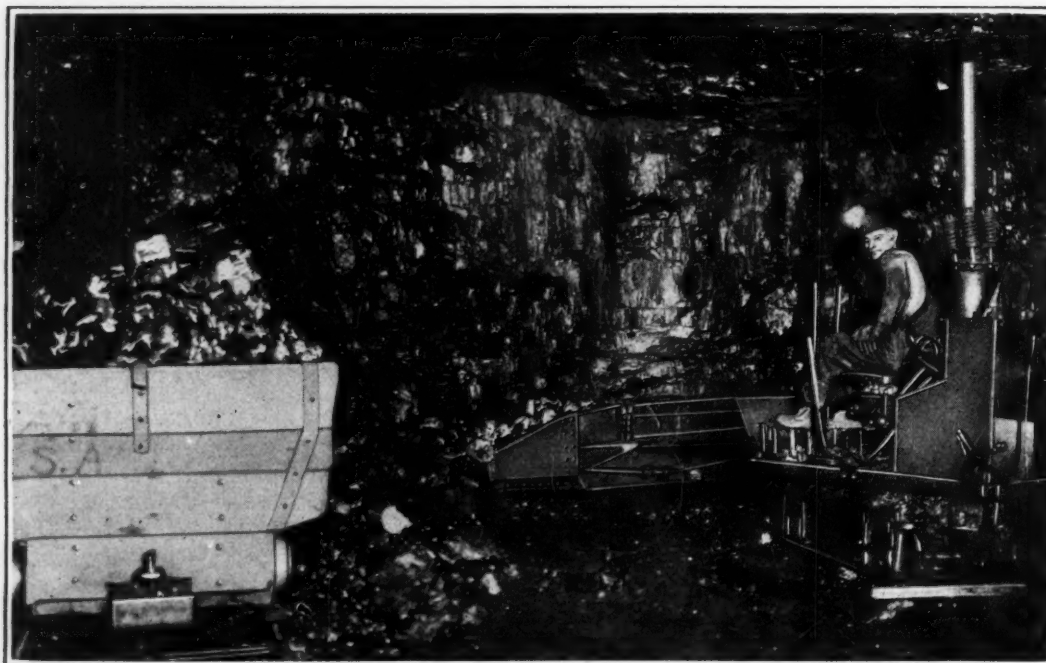


Fig. 2—Method Used in Developing Headings

Rapid development of headings depends much on the arrangement of track. Keeping the machine in cars has always been the biggest problem encountered with machine loading. This shows the arrangement of tracks in headings, cross-cuts and in room necks, all of which are developed by means of loading machines.

of bottom coal in place. In moving the machine from one room to another, it must pass through the last crosscut or the one nearest the face. To enable the machine to negotiate this stretch of track, these crossings are planked, thus preventing the heavy machine from damaging the track. This also enables the machine operator to pass to the next room much quicker than would be possible otherwise. Anything that can be done to facilitate the movement of the machine is highly important.

The methods of shooting employed in this mine had to be entirely revised. The coal in this field is difficult to shoot, especially in this mine, which shows no part-

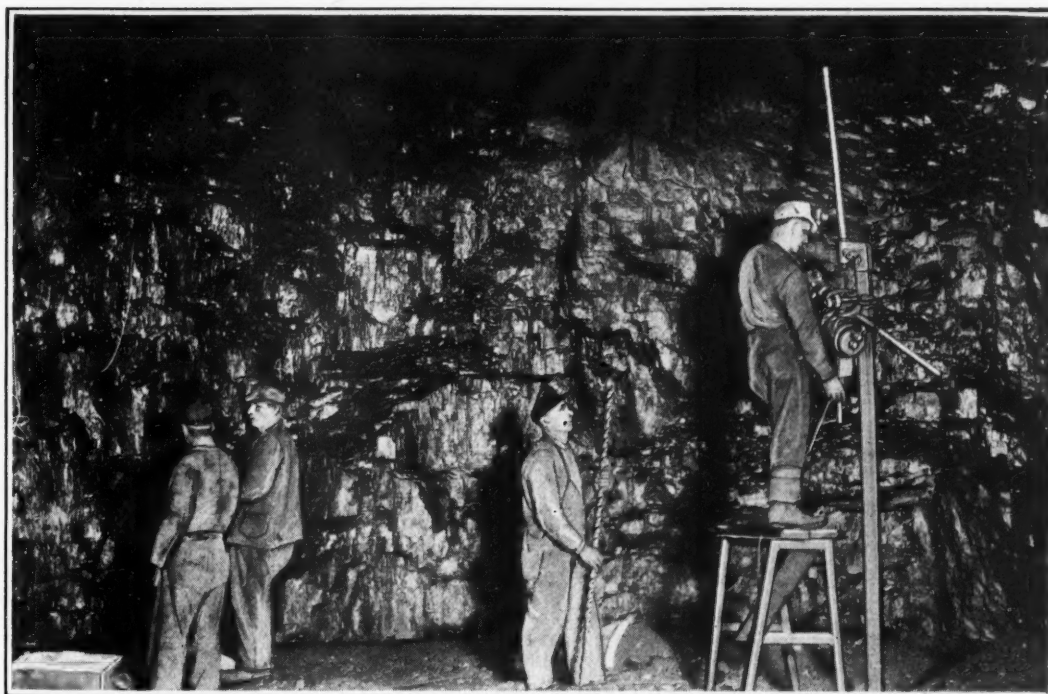


Loading in a Room

This type of machine is used for driving rooms and wide work in general. It takes about 1,200 lb. of coal at each dip and, consequently, only a few dips are required to fill a mine car. Inasmuch as time consumed in moving from place to place is time lost, so far as the machine is concerned, rooms in this mine are driven longer than they were with hand operation. In order to be a paying investment any loading machine must be busy as nearly continuously as possible.

Drilling a Face

Electric power drills are used for sinking the shot-holes. Work that took half an hour of hard labor by hand methods can now be done in approximately 2 min. The shot firers also may here be seen loading the holes already drilled preparatory to shooting. Blasting is done, however, only when all men except the shot firers are outside the workings. As may be judged from the appearance of this face the coal has no distinct cleavage. It is lightly shot so as to produce as large a percentage of lump as possible.



ing at the top and no well defined cleavage anywhere in the bed.

When hand-loading was in vogue, the miners usually fired the center shots first, and when this coal was loaded out, which was sufficient for a day's work for two miners, the rib shots were fired. For mechanical loading, however, in order to minimize the machine movement, it was decided to shoot the entire room down without first loading out the center shots. This presented a rather difficult job—that is, it was a difficult matter to break the coal down so that it could be handled with a machine, and at the same time make a good quality of lump product. Much experimental work with shooting had to be carried on, and A. E. Anderson, an explosive engineer, was called on by this company to help solve the problem. He spent considerable time in the mine, trying different methods and advising the foremen in the mine. The grade of powder used in rooms has been changed. Thus, where FF size was formerly used, F grain is now used. This does not shatter the coal so badly, and reduces the quantity of fine screenings. Although the management has had good success in this direction so far, it is still striving for better results.

MACHINE DRILLS USED EXCLUSIVELY

The old method of drilling by hand has been entirely done away with, and electric power drills are now used exclusively. Holes that formerly took 15 or 20 min. to drill, can now be sunk in about 2 min. The men that do the drilling have been provided with a small truck made of extra light material throughout. When moving from one place to another, the drilling apparatus is all loaded onto this truck, which can be easily pushed by hand wherever wanted.

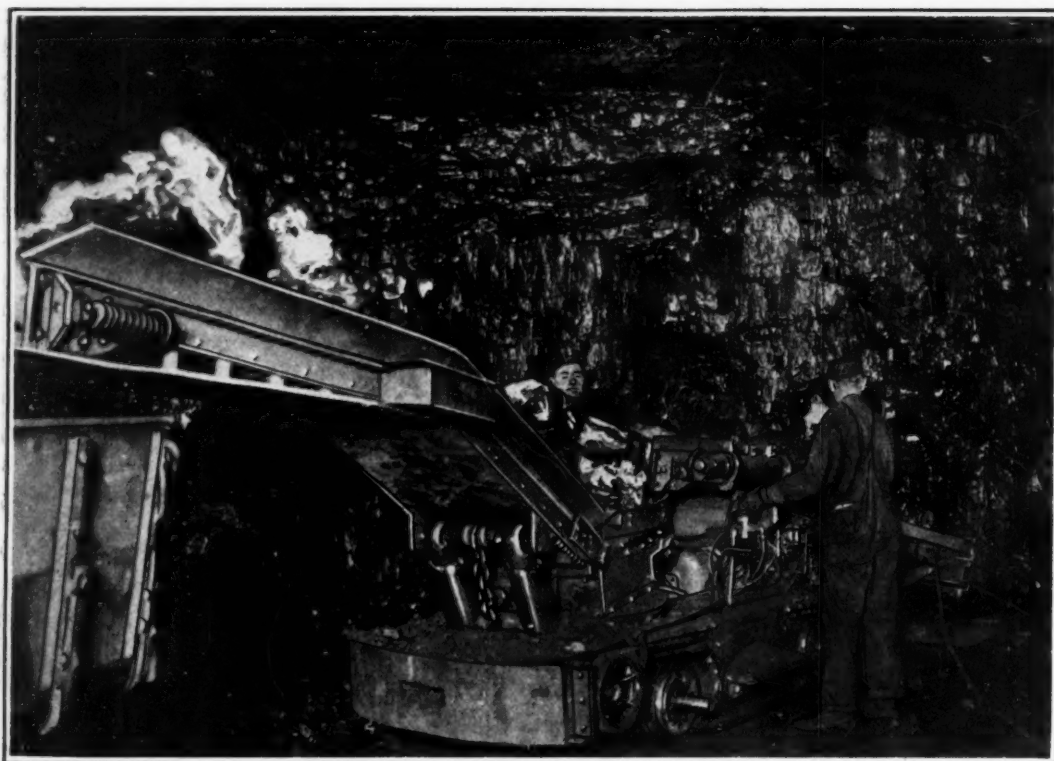
Another device that has been adopted to facilitate the work of the shooters is the paper tamping bag. These bags measure 1½ by 20 in. They are filled with clay on the outside of the mine. These clay dummies are packed in cases each containing 50, and a sufficient supply is shipped into every district each working day.

With tamping made up in this form, the work of drilling and shooting is greatly expedited. At the same time the company is assured that a safe material is being used as stemming. This is not always the case when the shot firers obtain their tamping from clay dumped loose in the mine. They frequently use coal-cuttings if clay is not handy. In this mine shots are fired only after all men except the shot firers are out of the workings.

This mine had 475 pit cars, with a capacity of 3 tons each when loading was performed by hand. Ordinarily the men chunked or topped the car to a height of about 2 ft. In order to make these cars hold 3 tons when loaded by machines, it was necessary to rebuild or enlarge them. This was accomplished by building the cars one foot higher, remodeling the door and by making them slightly wider.

Another important item in machine loading, and one often overlooked by operators, is the number of pit cars required for a successful mechanical operation. Many operators are of the opinion that as the work is more concentrated, and fewer working places are required, not so many pit cars are necessary. One machine operating under good conditions in a room will load at the rate of 18 or 20 cars per hour. For this reason, it is necessary to have an ample supply of cars standing on the parting, so that when a machine is at work, there will be no delay in waiting for empties. As the haulage motor makes trips to and from the tippie in a fairly systematic manner, an ample supply of cars, enables it to keep up the regularity of its movements without interruption when the machine is being moved, or when it encounters difficulty in loading.

A machine crew in this mine usually consists of eight men. This number performs all the work in connection with the machine—undercutting, drilling, shooting, trimming down loose top coal, and the like. It includes also the drivers and motormen necessary to put the coal on the parting in the panel entry. In order to provide the power required for operating the machines and additional locomotives, it was necessary to



Entry Driving

All narrow work is driven with this type of machine which is well adapted to operation in close quarters. One advantage of machine loading is that these machines are able to dig standing shots or those that have been shot so lightly that the coal is not broken down and rolled out on the floor as is necessary for best results with hand loading. Caterpillar mounting makes it possible to operate these machines anywhere without the aid of tracks.

extend the transmission lines. This mine has two well equipped fireproof generating stations underground. Station No. 1 is located on the main slope, 4,000 ft. from power house, and No. 2 station 8,000 ft. from it. Together they have a total capacity of 750 kw.

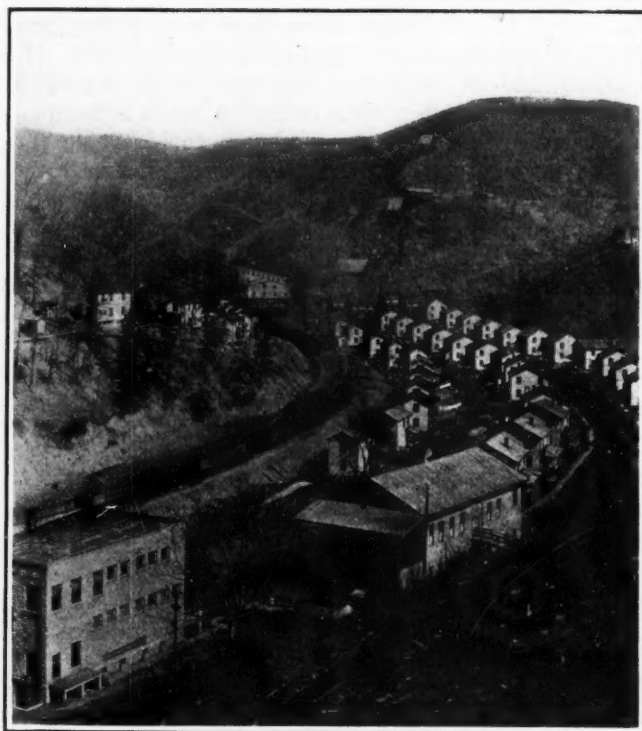
In order to be well prepared to take care of all mechanical difficulties, the company sent its master mechanic, Mr. Shott, to the factories where both types of loading machines were built. Mr. Shott spent a month in these factories, and actually worked in assisting to assemble the loaders and familiarized himself with everything pertaining to the construction of the machines. The Sheridan-Wyoming Coal Co. considers it thus made a good investment, as the men at the mines have little trouble in locating and correcting any mechanical difficulties that arise.

The tonnage produced by the different machines, no doubt, will be of much interest to many readers. While all of our machine operators are practically new men on this class of work, the tonnage obtained so far is fairly satisfactory. Taking November, for instance, the production per machine in room work averaged 196.75 tons per day. Machines engaged principally in loading entry coal naturally do not produce quite so high an output, 160.8 tons per day being the average. It is well to mention here that about one-third of the coal loaded by these latter machines is taken from rooms. As there is not enough narrow work to give them a full day's run in their district, and they usually finish out each shift loading room coal.

This company has a well equipped machine shop, which enables it to perform practically all of the ordinary repair work that is necessary around a coal mine. This shop contains one 20-in. lathe for ordinary work, one 36-in. lathe for turning down locomotive wheels, a drill press, power saw, grinder, air compressor, electric and acetylene welding outfits, as well as an acetylene generator, and a 30-ton press.

Adjoining the machine shop are the car and blacksmith shops where the company builds all its own pit cars. Equipment in this shop is complete in every

detail for doing this class of work. Repairs to all electric equipment—such as rewinding armatures, and the like—usually is performed in the machine shop. Also, a room adjoining one of the generator stations in the mine is fitted up for light repair work. Both the machine and car shops are equipped with independent motors, thus eliminating line shafts and economizing in power.



Hard-Burly Mine of the Hardy Burlingham Mining Co. in Kentucky

This view of the mining town of Hardburly, Ky., shows the village and in the background the outcrop of the Hard-Burly drift mine high on the hillside. The modern four-track tippie may also be seen. Here shaker screens, picking tables and loading booms comprise the preparation equipment. Run of mine slack, nut, egg and block sizes are shipped from this mine which is served by the L. & N. R.R.

Siberian Mining Advances Despite Handicaps

Frigid Temperatures and State Regulations Made Coal Operations Primitive in Kuznets Basin But New Methods Are Now Improving Output per Miner

By Alfred Pearson, Jr.
Toledo, Ohio

COAL MINING in Siberia suffers many limitations, by reason of conditions both natural and state-imposed. These are responsible for practices that will seem peculiar to the American reading this article descriptive of the Kemerovo mines in the Kuznets basin near the city of Tompsk. But when it is considered that winter brings such extremes of low temperature that mechanical ventilators cannot be used at coal mines unless the developed area is huge, and that legal restrictions intended to make mines safe often merely make trouble, it is easier to be sympathetic with Russian methods such as are now finally giving way to big-scale practices. These, no doubt, will remedy the primitive haulage and hoisting schemes of Russia and will bring up the tonnage per man to a level comparable to that in countries where the industry is less hamstrung.

The coal in most Russian mines pitches steeply. This makes machine cutting difficult or impossible. Therefore, in comparing the man efficiency of Russian mines with that obtained in other countries, it is necessary to use pick mining as a standard. During the period in which I helped direct operations at the Kemerovo mines in the Kuznets basin, we tried chain cutting machines on all grades and found the maximum operating limit to be 35 deg. when cutting down the pitch, 40 deg. up the pitch, and 45 deg. across the pitch; with 35 deg. the limit of practical application.

The system of mining is, in general, a form of longwall. The step system on steep pitches offers such a good opportunity for the use of explosives that I believe machines should not be used on steep pitches except in narrow work.

Kemerovo mines, owing to the byproduct plant op-

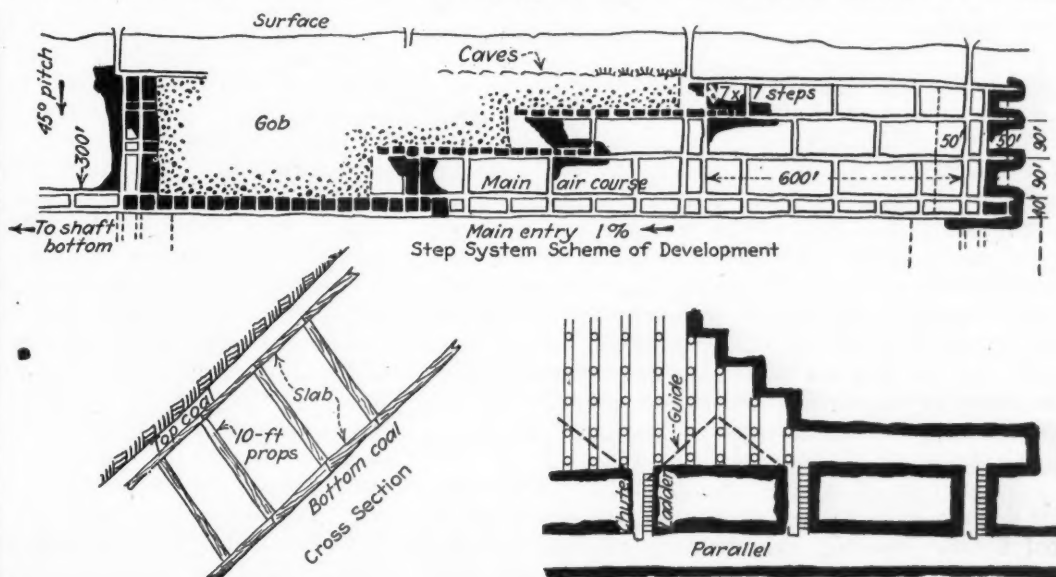
erated in conjunction with them, are now the keystone of the Kuznets basin arch. These mines have been producing for nearly twenty years. The coal is from the middle measures and is all of a medium-volatile grade. The top seam, or Kemerovo, is the coal wanted primarily for the ovens. It is from 12 to 15 ft. thick. An analysis shows 1 per cent sulphur, 10 per cent ash, 30 per cent volatile matter, and a heat value of 7,200 calories per kilogram (12,960 B.t.u. per lb.). The roof is a weak clay shale, and the bottom, clay. The seam is divided into four benches. The top bench is uniformly about 7 ft. thick and contains only about 9 per cent ash.

Originally only this bench was mined because its quality is above that of the other coal. In the course of some experiments it was discovered that, as loaded into railroad cars, the lower grade coal was no worse than the higher grade. Investigation revealed that so much of the top got mixed with the coal during mining operations that when it was shipped it contained 16 per cent ash. Detailed analyses of the various benches showed that the worst of the lower coal was the bottom bench, which is about 3 ft. thick. A mixture of all the coal above this stratum showed only 10 per cent ash. Since that time about 1 ft. of coal has been left up to hold the roof, and, by using 10-ft. props, practically all the good coal is recovered without seriously degrading it. The average, however, runs too high in ash, so the next seam is mined to reduce the ash content and make a cokeable mixture.

The system of mining followed in working the Kemerovo seam (Fig. 2) is typical of Russian practice. Slopes have been held in small favor in Russia, so this mine was opened by a circular shaft 16 ft. in diameter and 300 ft. deep, notwithstanding the fact that the coal outcrops under the surface drift and lies on a pitch averaging 45 deg. The drift is about 80 ft. thick.

FIG. 2
Kemerovo
Workings

This shows the details of the mining method followed in working these pitching measures. About one foot of coal is left up to protect the top as well as nearly all of the bottom bench as this is high in ash. Props approximately 10 ft. long are used. These are set on a rounded wooden slab are capped with another slab. Although the timbering is heavy the quality of the woods available for this purpose is poor.





Top Works

Here is shown the central mine tippie and headframe at the Kemerovo property which Mr. Pearson operated for a time. In the foreground is the dynamite house. Safety law limits the storage of explosive. The building must be 300 ft. from any other building, must be surrounded by an earth barrier and be protected by a lightning rod on a pole. The author is shown standing at the left with his mine superintendent.

It consists of 7 ft. of soil, 20 ft. of gravel and about 10 ft. of clay, the remainder being a layer of gravel and one of sand, these strata being of about equal thicknesses.

The shaft is concrete lined to its full depth and has steel buntons. The cages travel on two 120-lb. steel rails laid on one side like a railroad track. The shaft bottom is midway between the second and third beds of coal in a hard, fine-grained, gray sandstone. It will be seen that, should it ever be deemed desirable, a broad gage mine car, could be used only in connection with skips. This is because of the small size of the shaft. The side guide construction makes a skip design extremely difficult.

The bottom layout is cramped, 15-ft. radius curves being used. The main tunnel is lined with concrete in some places 2 or 3 ft. thick and reinforced. A cross tunnel is driven in both directions to the two coal beds.

In the plan adopted after the mines came under my direction, a main haulage line is laid in the third bed protected by the sandstone top from the squeezes and fires which are a real menace in the second bed. Cross tunnels are driven every 1,000 ft. and the track in the two beds withdrawn following extraction of the coal. With this plan the entry in each bed becomes a panel haulage way. It is accompanied by an air course on 40-ft. centers.

DRIVING UPCAIST CHUTES

A pair of upcast chutes are driven from the entry to the top of the coal seam on 40-ft. centers. One upcast is divided to provide a manway and a timber chute, the other is used for coal. These places as well as all other narrow work are timbered with 3-piece sets of round timber. Usually a 10-ft. crossbar is used, the posts being battered in the typical entry form.

These pairs of upcasts were originally 300-ft. apart from center to center, but this spacing was later changed to 650 ft. One of these passages was continued through the gravel to the surface, and is now used for air, men and timber. At suitable intervals parallels are driven on the strike, off of these upcast chutes.

Originally the parallels were driven on 90-ft. centers, this distance having been chosen to correspond with the roof break. Recently this distance was cut to reduce the size of the gangs of men employed. The top paral-

lel is driven just under the gravel. A 650-ft. panel is developed before any extraction is begun. Next, a companionway is started parallel to, and 25 ft. away, center to center, from the other strike entries and connected by cross cuts on 35-ft. centers, beginning at the top horizontal section separated by the parallel. This place is not timbered like an entry, but instead is temporarily supported by props. It is kept ahead so as not to be affected by work in the pillar area. After sufficient advancement is made in the companionway, men are started working up the pitch, in effect, widening the chute. Each man is allotted from 7 to 10 ft. of face and is kept a definite distance ahead of the next miner, thus maintaining a series of steps on an angle of 45 deg. across the panel.

EXPLOSIVES TOO EXPENSIVE

Although these steps offer ideal places for "bumping off" the coal, very little use is made of explosives, for the reason that their high cost offsets their advantages. Approximately double the output per man could be obtained by shooting the coal. When the top shows signs of working, the line of props immediately behind the face is boarded up and a hole shot in the roof of the back entry to allow the gravel to run into the excavated area.

The timber available is of poor quality. Poplar, pine, and balsam comprise the supply. Props are set in rows extending up the pitch. These rows are on 6-ft. centers, and slabs are used as caps and sills. The coal from the faces descends by gravity to the chutes, and is there run into small buggies, which are trammed by hand to the main chutes. As soon as the roof has settled, work is started in the panel below, and so on until the whole face is in operation.

The second seam, which is 30 ft. thick is reached through 50 ft. of clay. Soft top, the fact that the coal fires readily, and the adverse conditions encountered made it a difficult mining operation. The development work is similar to that employed in the upper bed, but in extracting the pillars special methods have to be used. Originally the full bed was extracted by widening the chutes at the bottom and working overhand but the coal squeezed to one half its normal thickness and heated so badly that this method had to be abandoned. It was found necessary to work the coal simultaneously

on about 50-ft. centers, in order to make extraction rapid enough to prevent the squeezing and heating.

The present method is to drive two or even three chutes on 50-ft. centers, then start working on the strike, taking out the full bed between the chutes. The area is back-filled as soon as possible by another crew, the miners meantime working in the opposite place. The next slice of 7 ft. is taken out over the backfilling and the process repeated until the next backfilling is necessary. This is a tedious and expensive method, but as yet represents the most practical plan offered. These methods were developed by the Russians.

Recently an attempt has been made to apply the square-timber set, the idea being that a more rapid extraction could be attained, resulting in the elimination of some of the backfilling. Better timbering would also assure safer working conditions.

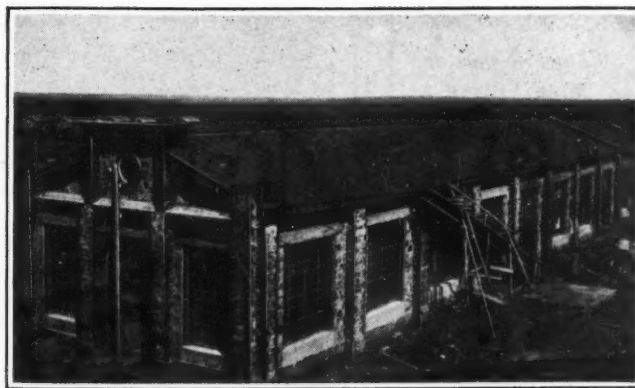
The backfilling proved to be a difficult problem. At first the gravel was drawn from above, the same as in the other bed, but so much was used that the layer of clay was broken and the mine flooded. This caused great expense and resulted in several accidents, so galleries were thereafter driven in the gravel, tapping the bed at frequent intervals, with the idea of not straining the clay. This is really a sop to the miners and the public rather than a sound operating practice. Breaking of the clay is inevitable, therefore it is extremely doubtful if flooding can be entirely avoided.

NEW METHOD WORKS WELL

An effort is also made to mine the hanging wall immediately over the excavations. This looks like a possible solution of the problem. Fig. 3 illustrates the old method.

In actual practice it was found that on account of its softening effect on the coke, only a limited quantity of the product of the No. 2 bed could be added to the mixture. An analysis of the coal indicates a trace of sulphur, 6 per cent ash, 35 per cent volatile, and a heating value of 7,200 calories per kilogram (12,960 B.t.u. per lb.).

Fortunately, it was found that the third bed would provide the necessary hardness in the coke if 10 per cent or more of that coal was added to the mixture. This bed is 6 ft. thick, has an excellent roof and analyzes 12 per cent ash, 23 per cent volatile, 7,200 calories per kilogram (12,960 B.t.u. per lb.). It presents no difficult mining problems and the system followed is essentially the same as that employed in the top bed.



Shop Building at the Kemerovo Plant

This general mine and repair shop was still under construction when this photograph was taken. It is of brick and stone with concrete sills and a tin roof.

Underlying these beds and within reasonable tunneling distance of one another there are known to be ten other beds of coal of commercial thickness, but of unknown quality.

DEVELOPMENT OF KOLCHUGINA MINE

Fifty miles south of Kemerovo, Kolchugina Mine works four, and has developed four more beds supposed to lie about 1,000 ft. under the Kemerovo coals. The beds lie on a maximum pitch of 20 per cent, and are reached by a 400-ft. shaft. Kolchugina coal is all high volatile and low ash. The beds worked are all about 5 ft. thick. The mine was first developed by driving entries on the strike on 600-ft. centers, with cross entries on the maximum pitch, on which are operated endless-rope hauls of German design. These are impractical in that cars can be caged only at the top and bottom. The upper levels have to serve the cars onto the level below, thus in some instances the cars are caged and recaged four times. The hauls are now being redesigned to extend the full height and permit the caging of cars at intermediate points. For efficient operation the mine should be equipped with electric hoists.

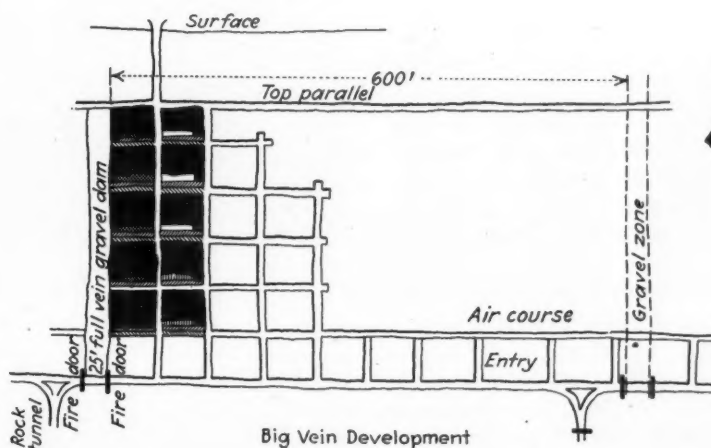
At first the bed was worked by driving stalls up the pitch, the pillar then being drawn back. The coal was loaded into sleds which were pulled by hand to the entry. There it was dumped and loaded into pit wagons which had been lifted off the tracks so as not to interfere with through traffic. The sleds held one-third ton and the wagons one-half ton.

The working plan has been changed since to develop

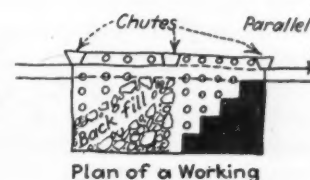
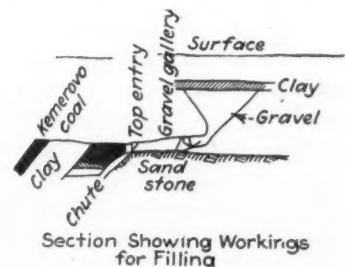
FIG. 3

Plan of Workings

These beds pitch steeply. This complicates mining operations, especially as the lower bed squeezes, heats and fires readily. Because this coal is prone to this firing it is necessary to provide gravel-filled zones or dams at regular intervals to arrest the course of a fire if one should start. Gravel for this purpose is procured from the surface drift above the subterranean outcrop.



Big Vein Development



Water System in Mine Village

There are problems of keeping water liquid in the frigid Kuznets region. Here is shown a pump house and tank inclosed within a log structure. Distribution through the village cannot be made in pipe lines. It is difficult to sink them below the frost zone. Therefore the water is delivered by this type of "tank wagon" — a barrel on sled runners.



a V-shaped face in steps. This was a natural modification of the step system applied to lighter grades, and reminds one of the V-system developed in West Virginia. This new system has the advantage that it concentrates a sufficient production to warrant the installation of a rope and thus stop the sledding of the coal.

Future development will space the flat entries on wider centers, the stalls will be driven on the strike, and chain cutting machines used.

Seventy miles south of Kolchugina the lowest measures are worked. These coals are high quality sub-bituminous. The beds are 60 ft. thick and are worked like the thick beds at Kemerovo. The full thickness of the measure is extracted to a height of 15 ft. for a distance of about 60 ft. This area is then backfilled while the face is advancing, as in the Kemerovo bed. Following the backfilling a 15-ft. slice is worked above it. Extreme care is exercised in timbering. The face is advanced and backfilled alternately, the process being repeated until four steps have been started. These four steps are then continued and back filled until the entry is worked out.

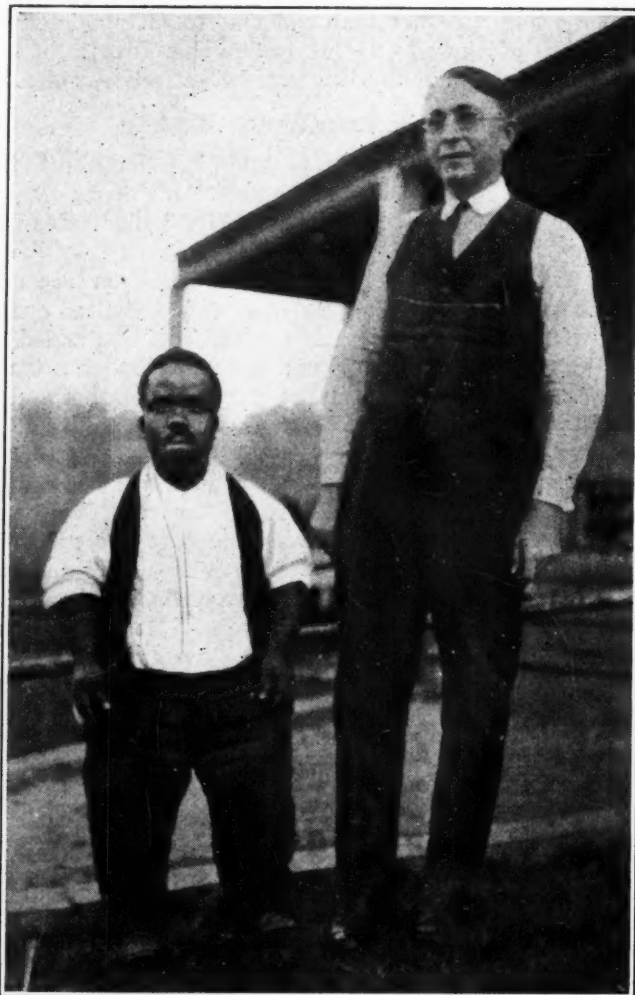
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In view of the hardness of the coal and the excellent roof I was not impressed with the need for the back-filling, but believe that if the square-set system were adopted and the thickness of the slices reduced, the cost of getting out the coal would be reduced in substantial degree.

The only other mines operating in this field are those on the Trans-Siberian R.R. There are but two, and both are old plants from which most of the coal has been worked out. So far as mining methods are concerned, nothing is to be found differing much from those already described. The conditions at these mines are difficult for the reason that the measures are badly distributed, and the beds pockety. These two plants operate in the same bed as that worked at the Kolchugina mine.

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He Fits A Thin Seam

In most other pursuits of life, a man of Sam Snider's stature would work at a decided disadvantage. But Sam is at no disadvantage as a coal loader in the Mulga (Ala.) mine of the Woodward Iron Co. Sam's height of 42 in. admirably adapts him to this mine, in which he can stand erect with comfortable assurance of not bumping his head. The average working height of about 54 in. is to him like that in a 7-ft. seam to the average man. Sam is thirty-four years old. The weigh sheets indicate that he is a better loader than the average. E. D. Clark, superintendent of the Mulga division of the Woodward Iron Co., is shown standing beside Snider.

Cable Suspensions of Steel Prove Their Worth

NO STANDARD form of suspension for borehole cables has ever been generally adopted. Home-made cable clamps are more common than factory types, and there are about as many types of home-made clamps as there are mines using them. Even at one mine two or more methods of clamping can sometimes be seen; nevertheless, progress has been made in many mining regions toward more substantial construction.

An example is the Mulga mine of the Woodward Iron Co., at Mulga, Ala. Here two 2,300-volt cables are carried into the mine through separate boreholes located several thousand feet apart. One of these cables supplies power to a 600-kw. converter equipped with full-automatic control, and the other serves a hoist which handles mine cars on a rock slope leading from the normal mine level down to the coal deposit of a displaced area.

In the accompanying layout of illustrations, the one at the left shows the clamp and suspension of the substation cable. This borehole is 385 ft. deep. The clamp, which is 42 in. long, is made from 2x7-in. mild steel. Through the center is a circular groove which, in each side, is slightly less than a semi-circle and whose radius is about equal to that of the cable. This insures a uniform clamping.

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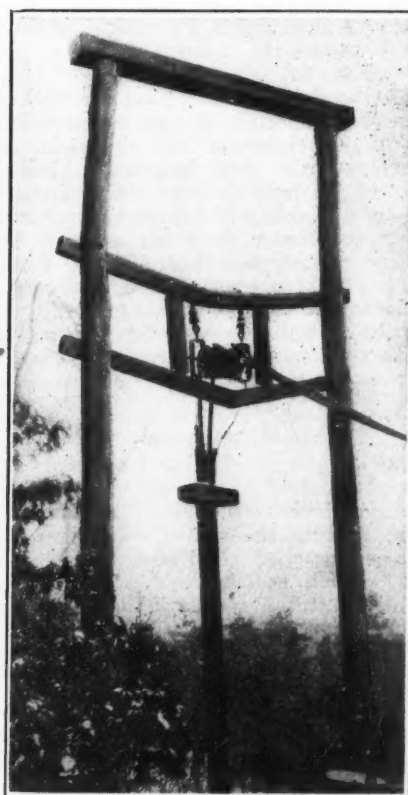
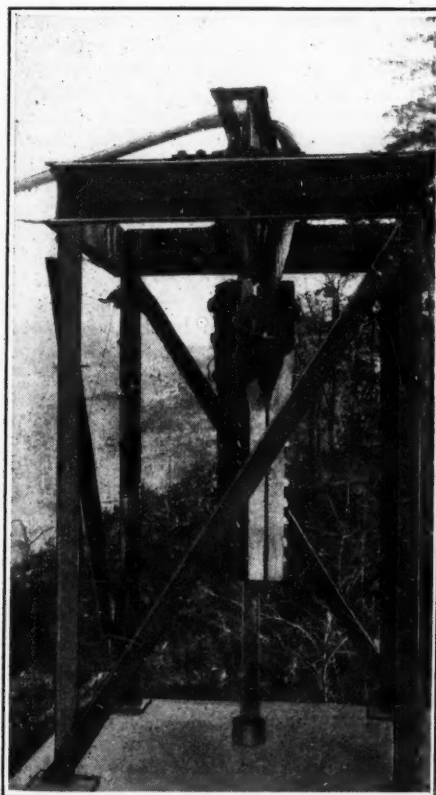
borehole the weight of the cable is taken by the casing, which extends about 12 in. above the concrete.

Sitting directly on top of the casing is a 6-in. grooved steel clamp. On top of this is a collar over which the individual wires of the armor are turned back about 4 in. A smaller clamp securely holds the ends thus turned back around the outside of the collar. The upper end of the collar has rounded corners so as to prevent sharp bends in the armor wires. The channel-structure clamp, at the top of the steel frame, serves only to hold the cable in a fixed position above the borehole.

WOODEN SUPPORT BREAKS

As a contrast to these apparently-everlasting suspensions of the Woodward Iron Co., the third photograph shows a wooden suspension at a coal mine in another state. Here, two 750,000 circ.mil., single-conductor, rubber-covered cables are held by individual clamps and by resting over a round block of wood. The wooden frame of the suspension broke down after five years service allowing the weight of the cables to be taken by the clamps alone, which, at the time the picture was made, were resting on the end of the casing.

The idea of the clamp and roller suspension for this class of cable appears to be a good one. The clamps are attached by messenger to the end-frames of the roller, thus tending to hold the roller, or round block, from being pulled to one side. The chief trouble with the installation appears to lie in the fact that steel cross-pieces were not used. Perhaps the poles were set farther apart than necessary. Although costing more, a complete steel structure usually is to be preferred for this sort of installation.



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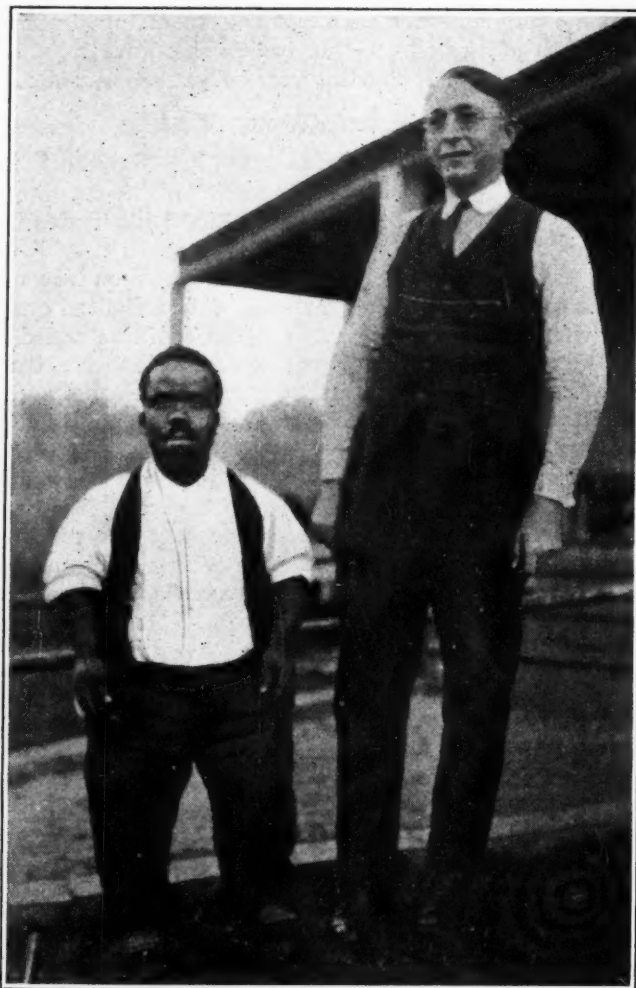
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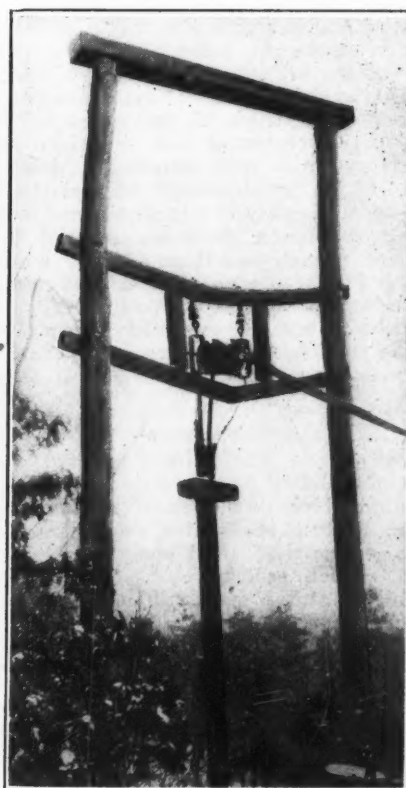
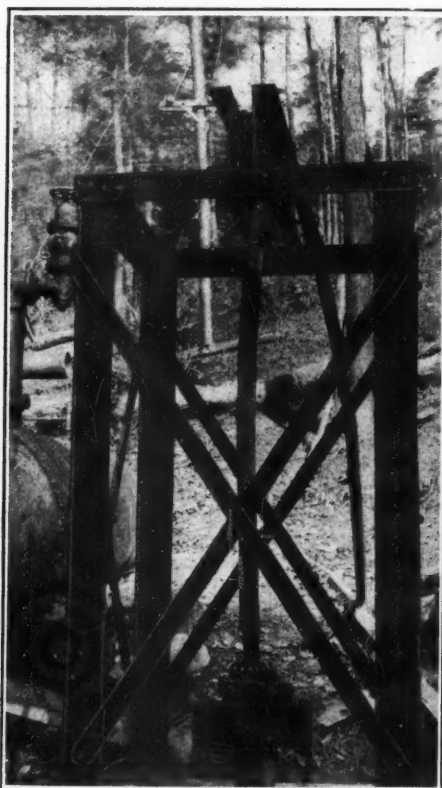
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Union Pacific Coal Co.'s Code of Standards—VI*

Mine Ventilation (Continued)

In the event that any structures such as tipples or other inflammable buildings in the vicinity of the mine mouth catch fire, the mine ventilating fan should be stopped in order that the smoke may not be drawn into the mine and circulate around the mine workings, causing injury or death to employees. All men should then be withdrawn from the mine without delay.

Where fans are remote from the mine entrance, and are electrically driven, they should be stopped by pulling the power switch, whether the switch be at the main power plant or at some other distributing station.

Some responsible man delegated in writing by the mine superintendent, should be instructed to do this.

Where mine fans are steam or electrically driven and are in close, or reasonably close, proximity to the main intake then, likewise, some responsible person should be designated in writing by the mine superintendent, to stop them.

Standards for Weighing Coal

1. The weighman (company weigh boss) must be bonded in the sum of \$500.

2. Art. 2, Sec. 3,552, Coal Mining Laws of the State of Wyoming "The weighman employed at any mine shall subscribe an oath or affirmation before a justice of the peace or other officer authorized to administer oaths, to do justice between employer and employee and to weigh the output of coal from miners in accordance with the provisions of Art. 1 of this act. Said oath or affirmation shall be conspicuously posted in the weigh office and any weigher of coal or person so employed who shall knowingly violate any of the provisions of this act shall be deemed guilty of a misdemeanor and upon conviction shall be punished by a fine of not less than \$25 nor more than \$100 for each offense, or by imprisonment in the county jail for a period of not to exceed 30 days or by both such fine and imprisonment."

Note—Oaths to be made in duplicate, one copy of which is to be filed with the mine superintendent.

3. Art. 4, Sec. 3,553.—"At every mine where the miner is paid by weight it shall be the duty of the weighman and check-weighman to examine and balance the scales each morning and in no case shall coal be weighed until such scales are tested by the United States standard weights and found correct, etc."

Note—Eight 50-lb. weights shall be kept at each pit scale for the testing of the same.

4. As provided in Sec. 3,552, Art. 4: "It shall be the duty of the state mine inspectors to inspect scales upon their regular visits."

Note—It shall be the duty of mine officials to insist upon this inspection.

*This is the sixth of a series of articles giving the Code of Standards put into effect by the Union Pacific Coal Co., at its operations in Wyoming. The first five articles appeared in the issues of Dec. 17, 24, 31, Jan. 7 and 14, and the remainder of the code will be published in a future issue in this form that permits of easy filing.

5. Each pit scale platform shall have at least a 3-in. clearance, and this shall be closely watched during the working shift to see that nothing lodges in the recess that may cause the scale to bind.

6. Whenever it is believed that any scale does not function properly, it shall be the duty of the weigh boss to immediately notify the superintendent who in turn will cause the scale inspector to make the proper examination and repair.

7. The counterpoise of any scale beam, that contains shot, nuts, etc., for balance, shall be so constructed that it will be inconvenient to add or remove any of these small weights.

8. No equipment should be allowed to stand on any scale except while being weighed.

9. No one except the weigh boss and check-weighman or properly accredited officials shall be allowed within the weigh room while coal is being weighed.

10. When a scale is not in use the beam catch shall be kept closed.

Track Scales

11. Under no condition must track scale weights be altered in order to obtain a check with the bulletin.

12. The weighmen shall keep the beams of all railroad track scales clean and free from rust, familiarize themselves with the construction of scales and make inspections at such intervals as are necessary to determine if scales are in proper working condition, and that scale pits are clean and dry.

13. Scales shall be properly balanced before using, and the beam fastened by means of the catch while equipment is being moved onto or off the scale platform.

14. Cars must be stopped on scales and uncoupled at both ends while being weighed.

15. Equipment should not be allowed to stand on scales except while being weighed.

16. Locomotives and other equipment not to be weighed, shall be passed over the dead rail.

17. Salt must not be used in remov-

ing ice and snow from the mine scales.

18. The responsibility for the accurate functioning of all scales shall rest with the company scale inspector, who shall make the circuit of all districts at least once each month, examine each scale and file at the general office a report of his inspection.

When Employing Explosives

Don't

—use more than three sticks of permissible explosive in any one hole.

—force a cartridge into a hole.

—slit the cartridge and tamp tight as this is detrimental to the cushioning effect.

—ever tamp with an iron bar unless copper tipped; a wood bar is preferable.

—hurry in seeking the explanation of a missed shot.

—drill, bore or pick out a charge which has failed to explode, but drill and charge another borehole at a safe distance from the missed one.

—carry blasting caps or electric detonators in your pocket.

—try to withdraw the wires from an electric blasting cap.

—keep electric blasting caps, or blasting machines in a damp place.

—leave the lead wires connected to any blasting machine. Disconnect them immediately if it becomes necessary to return to the shot.

—return to any shot under a ten minute interval.

—loop or tie the wire connections. Scrape the ends of the wires clean and bright and twist them tightly together.

—drag the leading wires around. Always coil them up and carry them.

—insert an electric blasting cap in any cartridge carelessly. Have closed end of the detonator pointing toward the bulk of the cartridge (See Fig. 29).

—store or transport electric blasting caps with high explosives.

—worry along with old, broken leading wire or connecting wire.

—operate blasting machines half-heartedly. They are built to operate with full force. They must be kept clean and dry.

—shoot from the trolley circuit.

Employment

1. Employment may only be obtained by application at the employment office at Rock Springs. This applies only to Rock Springs, Reliance, Winton and Superior.

2. No person will be employed for work in or around the mines who has not attained the age of 16 years.

3. No person will be employed for work within or around the mines of this company who has passed the age of 50, without authority from the general superintendent.

4. Blindness in one eye, or apparent impaired sight or hearing disqualifies anyone for employment with this company.

5. Heart trouble, disease of the lungs, hernia, loss of a hand, foot, or other serious physical defect shall be a bar to employment.

6. Since every person employed around a coal mine possesses poten-

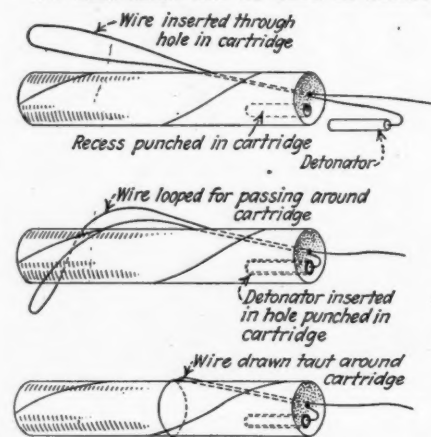


Fig. 29—Method of Using Detonator

This approved practice is suggested by notes obtained from a "Blasters Handbook." Delay detonators should be inserted after the cartridge has been slit, the cartridge should be closed and tied around the detonator.

tialities for accident or disaster, peculiar to the industry, it is imperative that each new employee be physically and mentally alert, as not only his own life but the lives of many others may be sacrificed or jeopardized by his actions. Therefore the foregoing five articles have been established as a guide in the employment of labor.

Copy of General Office Bulletin No. 2

The following important points to consider in the event of mine catastrophe by fire, explosion, flood, etc., were prompted by observations at a mine explosion:

1. Cut power off the mine from all sources.
2. Notify the general office.
3. Organize and enforce a checking system for all men entering the mine.
4. Organize for handling the crowd so that they cannot endanger themselves or the workers.
5. Thoroughly examine the fan and provide against overloading its motor or transformers as a result of short circuiting of air, by placing a competent man in charge of fan and motor.
6. The fan must not be reversed except on order of the official in charge.
7. Electric lamps should be made available in quantity, for the workers, together with proper charging facilities.
8. Provide telephone communication between important surface points and prepare portable telephone sets for underground extensions with sufficient wire for advance.
- Note—For this purpose take a desk phone or any other instrument available.
9. Arrange for water supply from all possible sources in the event of failure of usual supply lines.
10. Arrange base on top for lumber, brattice cloth, nails, pipe, fittings, hose, buckets and tools.
11. Provide shelter for man checkers, telephones, lamps, temporary morgue, workers, food dispensary and consulting place for shift leaders.
12. Obtain ample supply (at least three) of accurate and up-to-date maps of mine workings.
13. Establish base for rescue apparatus recharging, repair and storage.
14. Arrange for proper rest and food for apparatus men.
15. Arrange with railroad agent for handling and nearby spotting of U. S. Bureau of Mines rescue car.
16. Assign a man to transmit hourly bulletins to the general office and to prepare statements for the press.

Greasing of Wire Rope

1. Distinguish between a lubricant and a preservative in the selection of material for greasing.
2. A lubricant such as black oil has little or no value in the treatment of wire rope.
3. The proper oil should be a preservative which not only penetrates to the hemp center of the rope (in order to saturate it and prevent absorption of water) but also thoroughly coats the inside wires of each strand.
4. Main haulage rope shall be greased at least once each week and panel slope ropes twice each month.
5. Ropes are to be greased by passing them through "V"-shaped troughs, this to be done at the end of the shift

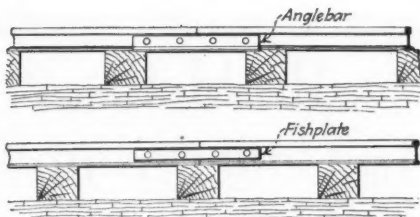


Fig. 30—Two Forms of Rail Joints

The suspended joint is used with angle bars but the bars are supported at each end by a tie. Fishplated joints are made directly over a selected tie, as shown in the lower illustration.

and the rope allowed to lie over night in the slope off the drum. Those portions that cannot be passed through the grease box, but must remain on the drum shall be painted.

6. A preservative such as is made by the Wire Rope Lubricant Co., Newark, N. J., is recommended for this work.

7. Sockets must be annealed and re-set every four months. A record of annealing and resetting of sockets is to be kept by the mine superintendent, same to be signed by the party doing, or having charge of the work.

Note—Where it has been the practice to make rope sockets locally, this will be discontinued as it is possible to purchase equipment of this kind fully as good as that made locally at a considerable saving.

Wire Rope

Important Precaution.—In the manufacture of wire rope, great care is exercised to twist the wire in the strands and the strands in the rope under uniform tension. If the ends of wire rope are not properly secured the original relation of tension, as manufactured, will be disturbed and maximum service will not be obtained due to the fact that some strands are carrying the greater portion of the load.

When cutting steel wire rope it is highly essential to place three sets of seizings each side of the cut to prevent disturbing the uniformity of the rope. The placing of proper seizing requires considerable practice and, therefore, it is advocated that the average user of wire rope exercise great care when placing seizings and for safety use a greater number than specified.

Unless a serving mallet is used, there is no advantage in making more than 10 wraps of wire per seizing.

Use annealed iron wire of the following sizes for seizing:

Diam. Rope	Wire Diam.	Birmingham Wire Gage
$\frac{1}{2}$ and $\frac{3}{4}$ in.	0.047 in.	18
$\frac{3}{4}$ in.	0.054 in.	17
$\frac{7}{8}$ in.	0.063 in.	16
$1\frac{1}{8}$ and $1\frac{1}{4}$ in.	0.080 in.	14
$1\frac{1}{2}$ and $1\frac{3}{4}$ in.	0.105 in.	12
2 in. and larger	0.135 in.	9

Note—From Roebbling's Hand Book, "Wire Rope and Wire."

Rope Inspector's Report

Mine Location
 Date Date of last inspection
 Diameter of rope Length
 Gross weight of trip hauled tons
 Slope angle
 Manufacturer of rope
 Kind of rope, lay, strand, steel, etc.
 Condition of socket
 Date socket was last annealed
 Condition of rope
 Date rope was installed
 Probable remaining life of rope
 Has rope proven satisfactory to date?
 If not, how and why has it failed?
 Date last greased
 Date rope was turned Date removed
 Total life of rope Tons hoisted

Cost of rope
 Cost of rope per ton carried
 Note—This report to be made monthly and in triplicate, one copy to be forwarded to the general office, one to local superintendent, and one filed with the master mechanic having charge of the inspection.

Mine Track Standards

1. The mine superintendent at each property must see that each foreman and assistant is supplied with copies of track data and turnout diagrams.
2. Each mine employee that may have supervision of track work in any way shall familiarize himself with these track rules.
3. In cases where data are insufficient, or there may be a doubt as to their meaning, the engineer of the property will supply the information.
4. Safety is, in each case, the first consideration and all installations must be made with this in view. All switches, frogs, guard rails or other track equipment where a person may be liable to receive injury, are to be properly blocked or guarded. This to apply to both inside and outside track.
- Switch throws are to be of the "parallel" type with a ground throw. No new installations are to be made with switch stands.

Track Clearance

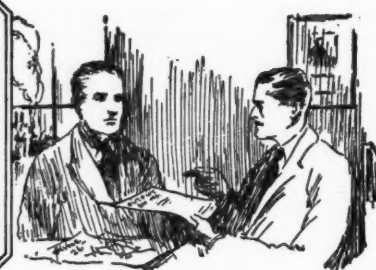
1. The minimum clearance to be maintained at all points on all haulage roads or track where switching is done is to be 2 ft. 6 in. from track rail to rib or nearest timber. This is to be regarded as the standard clearance for all tracks of the Union Pacific Coal Co.
2. Room necks are to be so turned and track so laid as to give a clearance of not less than 2 ft. 6 in.
3. Parting tracks are to be provided with the standard clearance above named.
4. Opposite all switch throws on any track at any point the track must be given not less than standard clearance.
5. Panel slope tracks are to be so laid as to give the proper standard clearance on both sides of the track for the entire length of the panel.
6. On long straight runs where locomotive or rope haulage are employed the standard clearance will be required on one side only but this clearance must not alternate from side to side of the track.

Ties

1. Ties must be laid on all haulage-ways (locomotive, rope and mule) at intervals not to exceed 2-ft. centers. (This implies 60-lb. steel on main slopes, 40-lb. steel on locomotive haulage-way, 20-lb. steel in rooms.)
2. Where ties of uneven length are used they should be aligned on the ditch or low side of the track.
3. Standard square ties in graded lengths shall be provided for each turnout where 40- and 60-lb. steel is used.
4. Joint ties should be selected that have an extra wide face where a choice is possible.
5. Ties removed that cannot be used for other purposes should be loaded and sent out of the mine at once.
6. Where fishplates are used, a selected tie shall be placed directly under the joint. (See Fig. 30.)
7. Where splice (angle) bars are used the rail joint shall be suspended between two ties. (See Fig. 30.)



Problems In Underground Management



Longwall Face Protects Mine Against Explosions

As a result of tests to determine the effect of release of pressure on the development of coal-dust explosions in mines, made by the British Safety in Mines Research Board in co-operation with the U. S. Bureau of Mines, at the Eskmeals Experiment Station, England, it has been made clear that there is less danger of a coal-dust explosion developing from a given source of ignition at a longwall face than at a "dead-end" or cul-de-sac.

The results obtained have an important application to actual coal mining conditions, as they show clearly that branch roads near the point of ignition of an incipient coal-dust explosion, by affording release of pressure, retard and may prevent the development of the explosion. Again, the course of a partially developed explosion may depend upon the arrangement of the mine roadways and branching passages, a knowledge of which will indicate the positions in the mine at which the most stringent measures should be taken against the accumulation of coal-dust or the occurrence of a source of ignition.

PRESSURE RELEASE NEAR ORIGIN

The nearer means of release of pressure are to the origin of the explosion the greater are their effects, the tests demonstrated. When an explosion has partially developed, a branching passage ahead of the flame tends to accelerate it, while one behind tends to check it. If a source of relief of pressure is provided in the path of a developing explosion, the effect is to increase its speed of travel until the opening is passed, after which the explosion is retarded.

Most of the experimental work on the development of coal-dust explosions that has been conducted in England has been concerned with the character and mode of deposition of

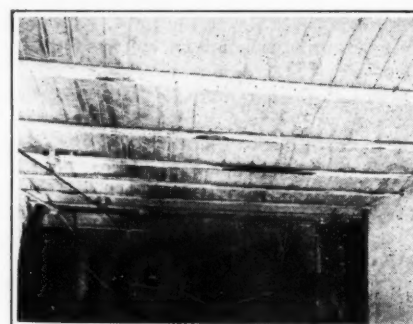
the dust, with the nature of the means of ignition or with the condition of the interior of the explosion gallery, whether unobstructed or provided with restrictions at certain points. No systematic work has been conducted to determine the arrangement of the gallery most favorable to the initiation and development of a coal-dust explosion, but, with few exceptions, the experiments have been conducted in a straight continuous tube open at one end and closed at the other. At the Experimental Mine of the U. S. Bureau of Mines some work has been conducted with regard to explosions originating in wide places, on the effect of side-openings from the main entry and on the propagation of flame from the mouth towards the interior of the mine, but, in general, the study of coal-dust explosions has been with regard to their development when traveling from a closed to an open end.

TO CONTINUE EXPERIMENTS

In Safety in Mines Research Board Paper No. 14, just issued by the British Mines Department, is recorded the results of these preliminary experiments, carried out in the 7½ ft. diameter gallery at Eskmeals, to determine to what extent the development of a coal-dust explosion was aided or retarded by release of pressure, either at the origin of the explosion or at some point in its path, such as would be given in a roadway of a mine by openings to side galleries or drifts. The experiments will be continued in the 4-ft. diameter gallery that is being constructed at the new British Experimental Station at Harpur Hill, near Buxton, and a parallel investigation will be made in the Experimental Mine of the Bureau of Mines at Bruceton, Pa. Such trials and tests should yield much information of value to the coal industry.

Overcast Construction Method Makes 15 per Cent Saving

A new, concreted construction of overcasts, which avoids the use of wooden forms and thereby effects a saving of about 15 per cent in the overall cost, is being used in the Harmar mine of the Consumers Mining Co., Harmarville, Pa. The side walls are formed by 8x8x16-in. hollow tile blocks which on the outside are plastered with a 2-in. coating of sand-cement mortar. As indicated by the accompanying illustration the roof consists of a series of concrete arches between 6-in. H-



This Economical Construction Makes
Strong Overcasts

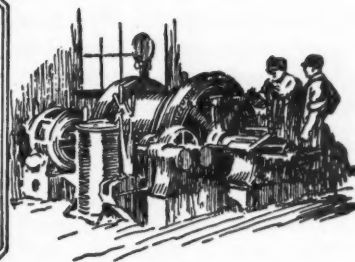
First, wire meshing is cut to the proper length and bent to the required spring. After this has been slipped between the H-beams it is covered with roofing paper after which a 2-in. concrete arch is poured. When this has set another layer of concrete is poured to fill the spandrel openings and make a flat surface above the beams. The arch effect thus obtained is quite as strong as flat concrete provided with reinforcing.

beams laid laterally on 30-in. centers across the top of the walls.

In the construction of these arches wire meshing is placed between and rests on the lower flanges of the H-beams. It is curved to about a 6-in. spring. The meshing is covered with a heavy roofing paper over which is worked a 2-in. layer of cement mortar. After this mortar has set from 12 to 24 hr. concrete is poured over the arches to a depth of about 4 in. as measured from their crests. This arch construction imparts the same strength to the roof that reinforced wire mesh within the concrete gives to a flat roof construction.



Practical Pointers For Electrical And Mechanical Men



Gas Engine Makes Reliable Stand-by Fan Drive at Coal Mine

Mine ventilating fans driven by steam engines are not immune to shutdowns, but nevertheless are seldom fortified by auxiliary drives. On the contrary, fans which are driven from purchased power and are used to ventilate gassy mines, generally are equipped with standby power. If a fan stops because of trouble with the local steam equipment, the engineer usually can tell at a glance, whether it can be started again in a few minutes or whether the repairing will be a matter of hours. When an interruption to purchased power occurs, the man at the mine is truly, "in the dark," as to when service will be restored. Phoning the power company may bring some information, but this phoning takes time.

Recently, purchased-power drives, in place of steam, were installed by the Montevallo Coal Mining Co., at Aldrich, Ala. After the change had been made the officials found it advisable to arrange for an auxiliary source of power to insure continuous ventilation.

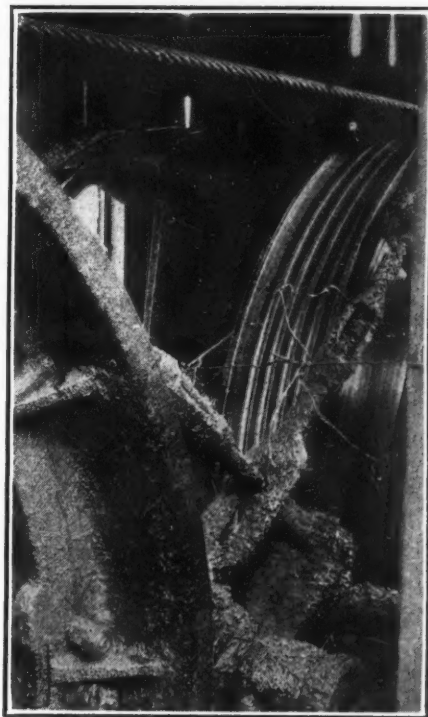
The fan, an 8-ft. x 30-in. unit, is

normally driven by a 75-hp. induction motor. The standby is a 75-hp. gasoline engine equipped with electric starter and fan-cooled radiator. This engine, a four-cylinder model operating at 1,200 r.p.m., is belted to a friction-clutch pulley mounted on the fan shaft, between the housing and the pulley of the electric-motor drive.

In case of a power failure the engine is started without load, and the friction clutch then is engaged slowly until the fan and engine are brought to the same speed. By quick work it is possible to get the engine into action before the fan loses its inertia.

Life of Blocks Prolonged By Greasing Brake

Greasing the brake drums in order to prevent the burning of the friction blocks is a practice rather contrary to theory. To maintain a given braking effort during a given time and through a given distance, requires the dissipation of a definite quantity of heat. In order to obtain a braking effect there must be friction between the blocks and the



Incline Machine at Caryville

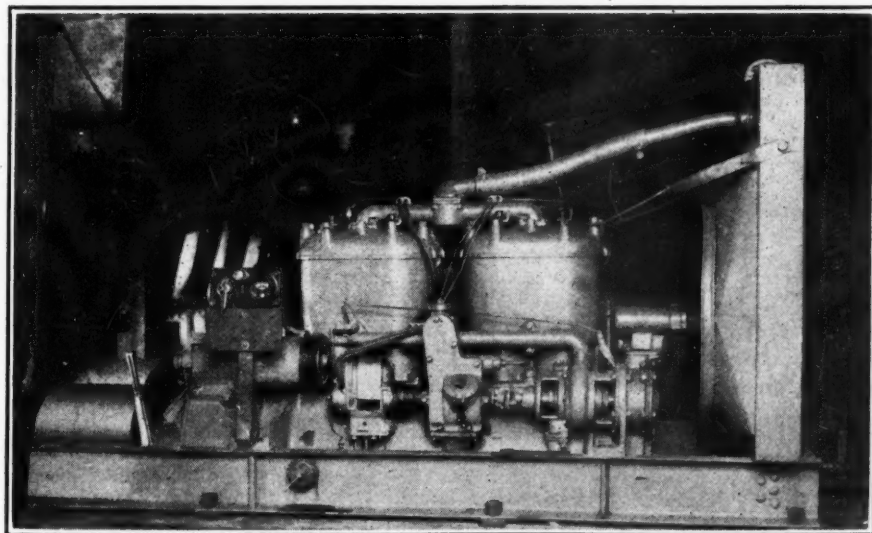
The four brake drums are thoroughly greased at regular intervals in order to prolong the life of the friction blocks. Many years' experience at this mine has proved the advantage of this unusual practice.

drum, so why, the average man would ask, grease the drum and thereby lessen the coefficient of friction? That must necessitate a tighter application of the brake. Regardless of this, the four brake bands on the incline machine of the New Caryville Coal Co., Caryville, Tenn., continue to be greased regularly with "black strap."

GREASE ADDS LIFE

The men in charge at the mine state that the friction blocks will last but a short time if operated dry, but have an average life of two years if greased regularly. The blocks are made of wood. Black gum has been found best for the purpose. The machine controls two 15-ton coal monitors operating on an incline 6,000 ft. long.

Theory based on natural law will explain any result which may be attained in actual practice but only



Standby Gasoline Engine in Mine Fan House

The Montevallo Coal Mining Co., at Aldrich, Ala., regularly drives the main fan by an electric motor operated from purchased power. The engine, which has a rating of 75 hp. at 1,200 r.p.m., is belted to a friction clutch pulley on the fan shaft.

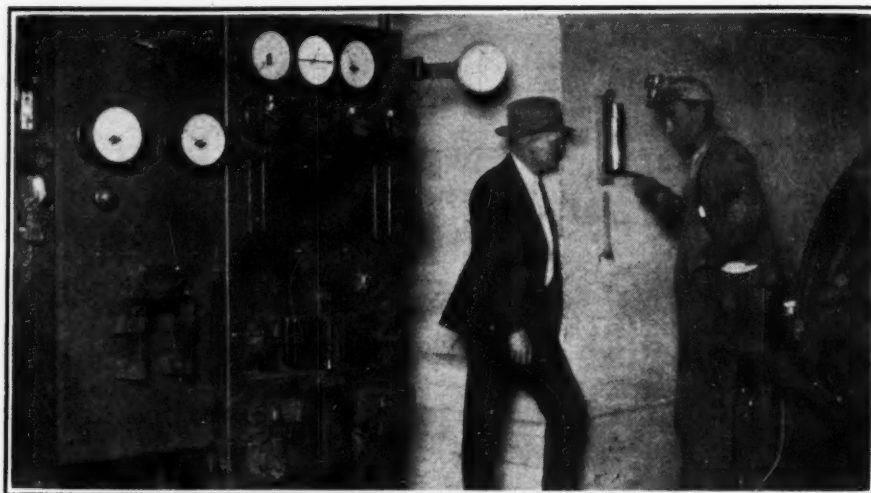
where all conditions are known and taken into account. Experience omits none of the conditions and so has the "last word" in any argument. In the case at Caryville, the burning of the blocks may be prevented by a change in the conductivity or radiating power of the wood by virtue of the saturation with oil. Aside from the difference in life of the friction blocks, greasing has the advantage of reducing chatter and noise.

Substation Changed with No Loss of Time

Located approximately 9,000 ft. from the drift mouth and under 350 ft. of cover is the only substation of the Nuttallburg (W. Va.) mine, of the Fordson Coal Co. The original equipment consisted of a 300-kw. synchronous motor-generator set with manual motor control and a re-closing generator breaker. Over a year ago this substation was converted to full automatic by the addition of switching, and relay equipment. The change was made without shutting down the mine, the work being done between midnight Saturday and 7 a.m. Monday.

MAKE USE OF OLD PANELS

Two of the old panels were left in place and parts of them were used in the automatic layout. At the direction of C. B. Loche, a special feature was added to the regular equipment as proposed by the manufacturer. This consists of a relay to disconnect and short circuit the synchronous field during starting. This feature, according to Mr. Loche, causes the motor to come up to speed more quickly, and with less disturbance. The relay is operated by virtue of the differential action between two coils, one connected to the generator brushes and the other in



Automatic Substation Inside a Fordson Mine

This 300-kw. unit was converted from a manual equipment, so now it is made up of parts from several manufacturers. In the photograph are C. B. Loche (left), electrical engineer of the Fordson Coal Co. and J. H. Boyer, foreman of the Nuttallburg mine.

series with the synchronous field. As the machine comes up to speed the current in the first coil increases, and that in the second decreases.

That the automatic control of this substation has been entirely satisfactory, is proven by the fact that,

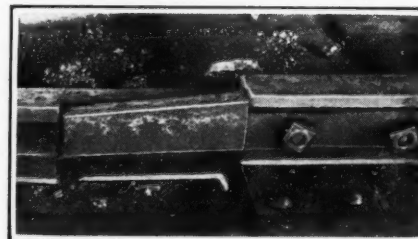
from the time it was changed to automatic, the salary of an operator has been saved. Starting and stopping of the motor-generator is controlled by a 30-amp. time switch mounted on the base of the alternating-current panel.

Device Eases Mine Cars Onto the Scale

Frequent hammer blows should be avoided wherever possible in the operation of any equipment. Failure of materials is more commonly due to repetitions of relatively small stresses than to a single stress beyond the ultimate strength. Mine-car scales usually are subjected to severe shock due to the wheels "dropping on" as they pass over the open rail joint. The old familiar "clickety-click" of cars moving onto the scale, is absent at the Mulga mine of the Woodward Iron Co., at Mulga, Ala.

The scheme used for easing cars over the open rail joint is shown in the accompanying photograph. As the car wheel rolls down the inclined

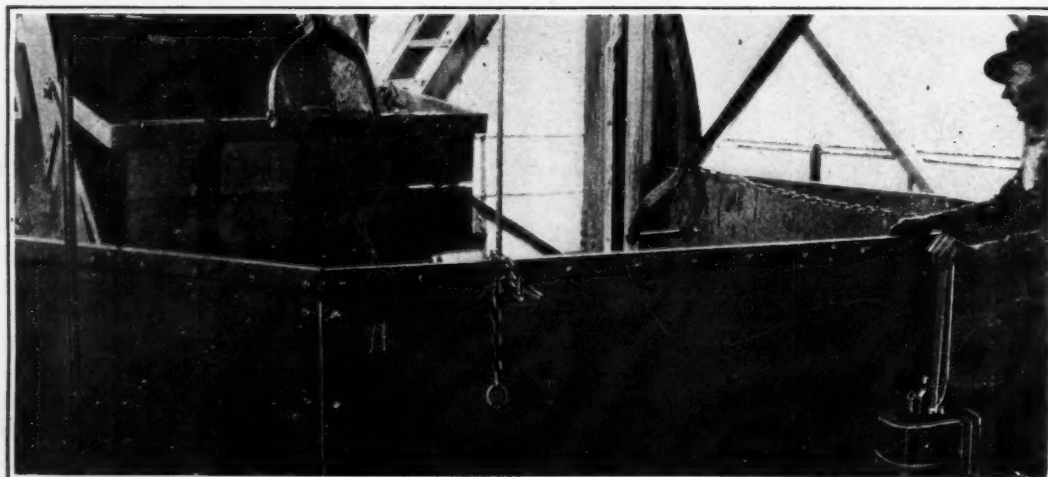
extension piece it engages and is picked up by the rail on the scale



This Arrangement Reduces Bumps at the Scale

When this device is employed mine cars passing over the rail joint when being moved onto the scale are not subjected to the usual bumping.

platform. The end of this rail has one side of the ball planed off to make room for the extension piece. No noise or shock results as the car comes on the scale.



Dumping Controlled on the Spot

This arrangement, besides saving the wages of one man, has other advantages. No time is lost in signaling between the dump and hoist house. The operator works by noting the position of the cages rather than by an indicator.

Book Reviews

Devine Exposes Shortcomings Of Coal Industry

By R. Dawson Hall
Engineering Editor, *Coal Age*

Knowledge of the bituminous coal industry sinks but slowly into the minds of the public. Data laboriously collected at much expense and tossed in the lap of hard-working people who have their own daily living to get fail to be read and digested. However, some small portion of them do receive consideration, of that there is plenty of evidence, and so the book by Dr. Devine may be welcomed by the industry and the public, especially in so much as the author was well known not to have nourished the kindest of feelings toward the industry in former years. His present volume records his reactions to painstaking investigation.

Many unfortunate points of view still remain. He believes that any man or corporation that has obtained by purchase an excellent piece of coal should be compelled to pay not alone a tax on the profits of his operation but a differential tax that would give him no advantage over his competitors. He believes that the operator should be handicapped by this impost so that he would be at no advantage in the race for business. He would have the public be the gainer and would arrange that no good fortune should accrue to the producer as the result of his perspicacity and good judgment. With such a provision the tendency would be to use no care in the purchase of coal lands but to rely on Washington to protect any injudicious investment that might be made. There would then be no investments that from the investor's point of view could be classed as injudicious.

Dr. Devine's little book, termed by him briefly "Coal" and more copiously "Economic Problems of the Mining, Marketing and Consumption of Anthracite and Soft Coal in the United States," published by the American Review Service Press, Bloomington, Ill., is full of statements that condemn the operators and defend the union, as well as statements that do just the reverse.

He says that the anthracite operators are "self-confident, sophisticated, not a little arrogant," and declares that "to the unsophisticated mind" the failure to increase output despite a growth of population in the natural and established markets of anthracite "certainly suggests a deliberate policy on the part of the anthracite combination that there shall never be enough anthracite to go round." Nevertheless, the operators will almost forgive him for this quite general, though unfounded belief, because he adds: "A policy of holding back rather than glutting the market is not to be condemned off-hand. It is the policy which cotton growers, wheat growers, tobacco growers and manufacturers carry out when they can and lament their inability to carry out when they cannot. Only very foolish persons destroy their profits by overstocking the market" and again: "What is so difficult in the case of farm products and would be difficult also in the case of soft coal, has been perfectly feasible in the case of anthracite; so easy that it would have seemed childish not to do it; so easy that the substance remains even after the successive means by which it was accomplished, one after another, have been declared illegal and as far as court decisions go have been destroyed—though in calling it easy I do not mean to suggest that it did not call for imagination and initiative."

PRaises HIGH STANDARDS

We are much surprised to see the following favorable comment from such a source as Dr. Devine: "The historical fact is that anthracite coal producers in their own province were pioneers in this sound policy [of standardized quality] and to this their prosperity is in part, though not wholly, to be attributed. The standards of quality have been maintained in the face of temptations to a contrary short-sighted policy of adulteration when coal is scarce and demand brisk."

We cannot avoid quoting further because it augurs ill for those engaged in the present controversy: "It is not inconceivable that the anthracite which is not mined in the

next generation or so may never be mined. In that case the owners of reserves, their unearned increment evaporated can only lament the golden eggs they might have gathered."

But quotation may go to too great lengths and briefly it should be said that in 448 pages (5 x 7½ in.) and with several badly printed but valuable charts, Dr. Devine tells the story of anthracite and bituminous coal broadly and in a well balanced manner and then in the end lays down what all parties to the controversy can do to better conditions. The reviewer would not write those recommendations quite as the Doctor has done, but no one can doubt the intellectual honesty of the author. The price of the book is \$3.

Herrin Coal Seam Near Duquoin, Ill.

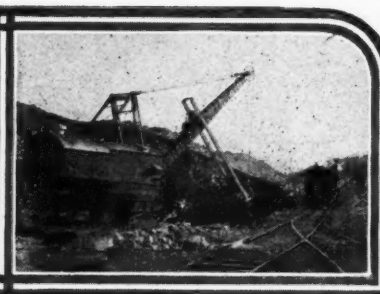
Many persons believe that Illinois coal lies on a dead level without any interesting structure. As a matter of fact, the Illinois coal fields have a varied structure and are not by any means regular. Thus in the Kathleen mine the contour which intersects the shaft is marked 140, whereas at a distance of 4,000 ft., less than a mile, contour 310 is crossed without a fault in the whole distance to account for the rise. The 170-ft. rise is made on the steep slope of an anticline. The average grade is 4.25 per cent and at many points the inclination is much steeper. On the eastern side of the slope is a complicated series of nine faults.

A publication of the State Geological Survey on the "Structure of Herrin (No. 6) Coal Seam near Duquoin," by D. J. Fisher, issued at Urbana, Ill., contains a study of the whole field including portions of Franklin, Jackson, Jefferson, Perry, Washington and Williamson counties. The faults of the fields other than those already mentioned are found in one group near Hallidayboro, one west of Royalton and one west of Weaver with one east of Duquoin.

The Herrin coal from a point two miles north of Royalton to a point over two miles north of Mulkeytown is so split that neither part of the seam is workable. The area thus made valueless in one direction almost east and west is ten miles wide. A smaller area lies between Royalton and Hallidayboro. The split in the seam in places is not far from 100 ft. thick.



News Of the Industry



Anthracite Operators and Miners Start Third Attempt at Agreement, This Time Meeting in Philadelphia

A third attempt to effect a new anthracite wage agreement was started at the Bellevue-Stratford Hotel, Philadelphia, Pa., on Tuesday afternoon, Jan. 26. The resumption of the joint conferences was undertaken at the request of John L. Lewis, who asked Chairman Alvan Markle to call the negotiating committee together again to consider a plan suggested by E. J. Lynett, publisher of the *Scranton Times*, as a basis of negotiation. This plan, making no provision for arbitration of disputed points and pegging wages at the 1923-25 basis for five years unless a voluntary agreement to change was effected at the end of the second year, has already been rejected by the operators.

Both sides entered the renewed negotiations clinging resolutely to the positions which have twice caused the conference to break off in a hopeless deadlock. The operators still insist that some provision to prevent future strikes must be incorporated in a new agreement. The union officials still publicly denounce any suggestion that the workers accept arbitration. As a result, the conference, after wrangling for several hours the first day without making any progress toward an agreement, adjourned at 6:30 p.m. to meet again Wednesday, Jan. 27.

Wrangle Over Publicity

At the outset of the Tuesday conference the miners proposed that the sessions be opened to the newspaper reporters. The operators offered an amendment that the publicity representatives of the two sides prepare a statement each day from the stenographic report of the conference, with the understanding that nothing important in the record be omitted from this statement. The miners rejected this amendment. The original motion was then put, the miners voting yes and the operators no, defeating the motion.

Mr. Lewis then offered the Lynett plan and placed in the record the first letter of Maj. W. W. Inglis commenting on this plan. Major Inglis countered with his later communication to Mr. Lynett and, with his letter to Chairman Markle, reiterated the operators' objections. Mr. Lewis moved that the Lynett plan be accepted as a basis for negotiations. The operators voted no on this, killing the proposal. The conference then adjourned for the day.

The call to reconvene the joint conference came as the climax of a week

of exciting developments in which the scene of action shifted between Washington, Harrisburg, the anthracite region, New York and Trenton. As told elsewhere in this issue of *Coal Age*, the halls of Congress again echoed with the demands of Congressmen that the government "do something." New Jersey also stepped into the picture for legislative action when Governor A. Harry Moore, in his inaugural address on Jan. 19, recommended the creation of a tri-state commission with power to condemn anthracite coal-bearing lands and to construct another railroad from the region to tidewater. Governor Pinchot's legislative program for regulating the industry was blocked when the House mining committee voted an indefinite postponement of action on the bill to make anthracite coal mining a public utility and made a negative report on the bill authorizing interstate compacts.

Pinchot Bills Get New Chance

Later, however, the Pennsylvania House leaders experienced a change of heart. At a meeting on Jan. 25 it was announced that the bills would be reconsidered. The same evening the Senate committee on mines and mining took action on the Woodward bill to amend the miners' certificate law. The Senate committee struck out the Woodward proposal to repeal the requirement for two years' experience, but changed the law to permit that experience to be acquired outside of the state.

The New Jersey executive, in urging a tri-state commission, condemned the national administration for inaction which permits "a few powerful men" to "snap their fingers in the face of what we are pleased to believe is the greatest government on earth." This inaction, he declared, forced state action, but regulation of anthracite as a public utility was not the solution of the problem.

"With the co-operation of New York and Pennsylvania," said Governor Moore, "a tri-state commission could be set up with power to condemn—acting through the state courts of Pennsylvania—a sufficient amount of lands containing coal to set up competition against the trust. These lands could be leased on very moderate royalties to operators willing to develop the mines in competition with the trust.

Bills to cover Gov. Moore's recom-

mendations, it was later announced, would be introduced Feb. 1.

Adverse action on the Pinchot administration bills by the Pennsylvania House committee on mining followed a public hearing at Harrisburg on Jan. 20 at which the proposals were opposed by representatives of the operators and retail coal men. The attack was led by Walter Gordon Merritt, counsel for the Anthracite Operators' Conference, who told the committee that the Pinchot legislative program was neither feasible nor constitutional. Any attempt by the Public Service Commission or any other agency of the state to control prices would find that agency "as helpless as a child in the face of economic conditions." John T. Brady, Philadelphia & Reading Coal & Iron Corporation; J. A. Kelly, Hudson Coal Co., and Wellington M. Bertolet, Pennsylvania Retail Coal Merchants' Association, also spoke against the bills. "No one," read the Associated Press report of the hearing, "appeared in support of the measures."

The cavalier treatment accorded his recommendations moved Governor Pinchot to a long denunciatory statement, made public Jan. 21, in which he accused the House committee of sharp practice. The Governor contended that proponents of the measures had not been given sufficient notice to prepare statements in support of the bills, but that they had been led to believe that consideration of the measures had been postponed until Jan. 27.

Lynett Offers Plan

The Lynett plan, first published in the *Scranton Times* on Jan. 18, came to the fore last Thursday when Major W. W. Inglis expressed his opinion of the program. The plan itself reads as follows:

- (1) The miners resume work immediately.
- (2) A five-year contract dating from the time of signing the agreement.
- (3) The wages in effect under the last contract to continue during the term of the new contract, unless changed as hereinafter provided.
- (4) At the instance of either party, given in writing sixty days before two years have elapsed from the signing of the contract, a conference may be called for the consideration of changes in the agreement on the subject of wages only; the miners to remain at work until the end of the five years' contract, whether the conciliators agree upon a change of wages or not.
- (5) One year before the contract expires representatives of the coal operators and miners to meet to devise an arrangement whereby work may be continued at the mines at the expiration of the contract and during the negotiations for a new agreement.

Major Inglis directed his objections to the fourth and fifth paragraphs. "As to paragraph 4," he wrote, "it would appear that after two years no question

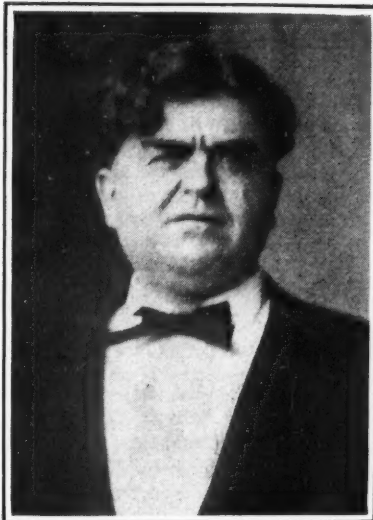
as to adjustment of wages could be raised by either party; the wages would be fixed for the last three years of a five-year period, although it would be in this latter period that conditions are most in doubt. The provision that the miners are to remain at work whether or not agreement is reached is one for which we have all along contended, and which has been opposed by Mr. Lewis on all occasions.

"We appreciate and welcome your interest in bringing about a settlement. We are already converted to the necessity for some such plan as you suggest with provision against deadlocks, and this can be done without sacrificing any of the miners' rights or interests. The need seems to be to convince Mr. Lewis of this fact."

Mr. Lynett interpreted this reply as an acceptance of his program and conferred with President Lewis of the United Mine Workers, who announced that he was ready to resume negotiations with the Lynett plan as the basis of discussion. A statement from Philadelphia on Friday, however, made plain that the operators had no intention of accepting the Lynett basis. "The Lynett plan," said this statement, "did not contain anything that had not been threshed out in previous conferences. For this reason it does not afford a basis for a renewal of negotiations."

Inglis Answers Lynett

Major Inglis further amplified his position in a second communication to Mr. Lynett, in which he reiterated the objections raised in his first letter. "Your editorial [of Jan. 20]," said Mr. Inglis, "states that 'your plan eliminates arbitration altogether.' Mr. Lewis' letter of Jan. 22 confirms this understanding, while the operators are firmly of the opinion that this feature in some form is absolutely necessary in any workable contract.



John L. Lewis
President of the United Mine Workers

"To now say that I accepted your plan and that the operators conference have repudiated my acceptance is far from the fact. Neither I nor anyone authorized to speak for the operators could have accepted your plan because, as you admitted, it amounted to a five-year contract with no means whatever for avoiding just such deadlocks as the one from which we are now suffering."

To this Mr. Lynett retorted that the reply of the chairman of the operators' negotiating committee was "a weak and puerile repudiation of the expressed and implied approval of *The Times'* plan for settling the strike." Nevertheless, Mr. Lewis held to his desire for a resumption of the joint conferences, and Alvan Markle, chairman, accordingly issued a call for a meeting at Philadelphia on Jan. 26. The operators followed this with a reiteration of their refusal to accept the Lynett plan as a basis of discussion.

Central Penna. Producers Urge Reopening of Lake Rate Case

The Central Pennsylvania Coal Producers' Association on Jan. 25 filed with the Interstate Commerce Commission a petition for re-argument and reconsideration of the Lake cargo coal rate case, supporting the case of the Pittsburgh Coal Producers' Association against railroads carrying coal to the lower Lake Erie ports for transshipment to destinations beyond. The Pittsburgh operators contend that the present rate structure gives preference in rates to West Virginia and Kentucky coal as against Pennsylvania coal.

The Central Pennsylvania Coal Producers' Association stated in the petition that it represents miners and shippers of bituminous coal in the Lake cargo origin freight rate groups of Reynoldsville, Freeport, Blairsville, Indiana County, Bellwood, Vintondale, Altoona, Spangler, Cherry Tree and Clearfield.

The Northern West Virginia Coal Operators' Association will enter a protest with the Interstate Commerce Commission against reopening the lake coal-carrying rate case. Petitions against reconsideration already have been filed by the Michigan Public Utilities Commission, the Minnesota Railroad and Warehouse Commission; Brackett's Coal Statistical Organization, Fairmont, W. Va.; By-Product Coke Corp., Chicago; Northern States Power Co., Minneapolis; St. Paul Association of Business Affairs, Wisconsin Steel Co., Connellsville coke shippers, numerous shippers in West-Virginia and Kentucky and several railroads.

Progress is being made in the statewide safety campaign, according to Robert M. Lambie, of Charleston, chief of the West Virginia Department of Mines. It is reported that 7,000 miners attended the first eighteen meetings that were held in the state.



No Volstead Law to Stop This "Bootlegging"

When the weather got cold, strikers like these in the anthracite region went out and tapped coal beds near outcrops. Usually the men sank shallow shafts with "pit mouths" like the one shown at the left from which an eager young miner is looking, and then rigged up a hoisting and screening system such as the one in the long picture. They used this coal in their own homes at first but recently they have been selling it at nights for about \$18 a ton in various towns of the hard-coal region.

Soviet Spends \$2,000,000 in U. S. for Mining Machinery

American coal mining machinery valued at \$2,000,000 was purchased for Soviet mines in the Donetz basin by the technical commission which has returned to Moscow after purchasing equipment in America, Germany and England. The figure is given in the report of the Commission, received by the Russian Information Bureau at Washington, D. C. With the aid of the new equipment it is planned to increase coal production in the Soviet Union 43 per cent this year.

The report states that the bulk of the equipment purchases made abroad, including 150 of the 196 coal-cutting machines, came from the United States. Other American equipment bought included electric mine lamps of the latest type, automatic appliances for drawing mine cars, automatic appliances for closing mine doors, etc. Part of the equipment has already been shipped. The terms of the principal purchases were 60 per cent cash and 40 per cent after five months.

The report adds: "The acquirement of highly-improved American coal-cutting machines of Jeffrey and Sullivan manufacture is particularly important for the Donetz basin. The Sullivan Machinery Co. will send a special instructor to the Soviet Union to supervise the installation. The coal-cutting equipment, the first to be employed in the Donetz mines, effects an enormous increase in operating efficiency, each machine taking the place of 25 coal hewers."

British Output and Exports Of Coal Wane in 1925

Output by British coal mines during 1925 was nearly 25,000,000 tons lower than in the preceding year. Up to Dec. 12, with ten or twelve working days to be accounted for, British mines had produced 237,150,300 gross tons of coal during the year. The final total will run below 250,000,000 tons, as against 273,260,900 in 1924 and 282,354,900 in 1923. For 16 of the first 20 weeks of the year production ran beyond 5,000,000 tons per week, but beginning with the 21st week that figure was not reached again until the end of November, when anticipation of the holidays caused workers to turn out heavier tonnage.

In 11 months 46,185,067 gross tons was exported, or 10,300,000 less than during the corresponding period of 1924 and 27,000,000 below the unusual export of 1923. Of the decline in 1925, 8,300,000 tons represented the lower takings of only four countries—Germany, Netherlands, Belgium and France.

Values show the position even more unfavorably, the proceeds for 11 months of 1925 amounting to £46,201,851 at a quotation of £1 8d. while the corresponding period of 1924 gave £66,507,781 at £1 3s. 6d., and 1923 had £92,659,201 at £1 4s. 1d. In two years the decline in the value of export coal alone reduced the offset to British imports by over \$230,000,000.

Philadelphia Engineer's Office Seeks Coal Bids

Bids for approximately 15,000 gross tons of semi-bituminous coal will be received by the U. S. Engineer's office at Philadelphia until noon, Feb. 17. The coal is for use on the floating plant for the maintenance and improvement of existing river and harbor works during the period April 1, 1926, to March 31, 1927.

Kentucky Coal Output Gains 10,000,000 Tons in 1925

Coal output by Kentucky mines in 1925 totaled 53,217,065 net tons, according to an estimate by W. H. Jones, chief of the state Department of Mines. These figures, based on reports received up to Jan. 15, 1926, indicate an increase of nearly 10,000,000 tons in production over the preceding year. Output by counties during the last three years was as follows, in net tons:

	1923	1924	Estimated 1925
Bell.....	2,276,098	1,859,055	2,239,443
Boyd.....	119,688	125,142	48,365
Breathitt.....	124,005	138,722	145,017
Carter.....	101,466	62,685	72,411
Clay.....	546,400	220,897	179,240
Christian.....	79,183	19,759	97,116
Daviess.....	102,011	138,186	139,319
Floyd.....	3,150,549	3,701,437	4,714,396
Hancock.....	6,800	9,700	9,700
Harlan.....	8,400,877	9,076,269	11,263,835
Henderson.....	334,250	410,860	469,910
Hopkins.....	2,223,858	3,289,834	3,893,305
Johnson.....	693,409	1,021,576	1,190,644
Knott.....	342,599	342,321	466,715
Knox.....	576,923	452,360	349,281
Laurel.....	52,845	137,685	147,276
Lawrence.....	6,727	442	105
Lee.....	30,033	4,974	8,950
Letcher.....	4,405,622	4,851,806	5,919,805
Martin.....	375,615	432,898	398,114
Magoffin.....	12,164	13,526	41,540
McCreary.....	869,113	802,117	862,355
McLean.....	107,839	21,445	75,298
Morgan.....	38,644	25,420	61,578
Muhlenberg.....	3,655,839	1,297,581	3,274,382
Ohio.....	925,734	216,659	332,446
Perry.....	4,899,434	5,229,066	5,542,690
Pike.....	5,648,221	6,049,809	7,300,039
Union.....	1,221,456	1,049,196	956,707
Webster.....	1,318,435	1,682,264	2,267,058
Whitley.....	480,272	704,041	750,025
Totals.....	43,122,109	43,387,732	53,217,065

Slim Chance for Woodlock

Senate leaders last week took up consideration of a request that President Coolidge withdraw the nomination of Thomas F. Woodlock, of New York, as a member of the Interstate Commerce Commission.

The Senate Interstate Commerce Committee on Jan. 23 again questioned Mr. Woodlock, who received a recess appointment last spring after the Senate twice had failed to act upon his nomination. Opposition is based largely upon his statement that he has voted the Republican national ticket since 1916. Under the law a Democrat must be appointed to fill the place to which Mr. Woodlock was named.

Unofficial polls of the Senate are said to have disclosed that it is doubtful whether Mr. Woodlock's nomination could be confirmed.

A favorable report on the nomination of Charles W. Hunt, of Iowa, to be a member of the Federal Trade Commission was voted Jan. 21 by the Senate Interstate Commerce Committee.

Penna. Compensation Claims In 10 Years \$108,690,846

The workmen's compensation system in Pennsylvania completed its first decade on Jan. 1 and coincident with the event the bureau of workmen's compensation of the State Department of Labor and Industry issued its annual report for 1925. It was the first state report issued this year, and it contains a summary of the work of the past ten years, prepared by William H. Horner, director of the bureau.

The report shows that in 1925 176,392 accident cases were reported, including 2,022 fatal cases. Of these fatalities, 792 occurred in the mines of the state, 831 in industrial plants, 319 among the public utilities companies and 80 were attributed to state and municipal agencies. Compensation payments were authorized in 80,261 cases and the total amount of compensation incurred in these cases was \$12,748,266, \$5,397,192 of this being in fatal cases.

Since the compensation law became effective, on Jan. 1, 1916, 1,836,681 accidents have been reported to the bureau. Of this number, 24,699 were fatal.

From Jan. 1, 1916, to the first day of this year a total compensation liability of \$108,690,486, covering 692,863 cases, has been incurred by the employers or their insurance carriers, \$54,374,855 of this being in fatal cases. In fatal and permanent disability cases the total amount provided by the agreements and awards is \$75,645,325. Of this total \$37,785,380 has been paid, leaving unpaid obligations amounting to \$37,859,945.

Kentucky Utilities to Buy Power Company

C. F. Richardson, president of the West Kentucky Coal Co. and the West Kentucky Electric Power Co., and L. B. Herrington, vice-president of the Kentucky Utilities Co., recently consummated an agreement whereby the latter company will purchase all the capital stock of the West Kentucky Electric Power Co. As a part of the deal the Kentucky Utilities Co. gets from the coal company a large tract of land bordering the Ohio River near Sturgis, where there is an abundance of good coal and water.

The Kentucky Utilities Co. also contracted to furnish all electric power used in the operation of the coal mines and other enterprises of the West Kentucky Coal Co. and agreed to buy all of its coal for the Paducah and Earlington plants from the West Kentucky Coal Co.

The mines of the West Kentucky Coal Co. are the largest in western Kentucky and are heavy users of power. Besides supplying the coal mines, the West Kentucky Electric Power Co. furnishes electric service to Earlington, Morton's Gap, Wheatcroft and Sturgis, and to the transmission system of the Kentucky Utilities Co. It also supplies water to the cities of Madisonville, Earlington and Sturgis and to the Illinois Central and Louisville & Nashville railroads.

Hands-Off Policy Wavers in Congress; Coal Legislation Unlikely to Pass

By Paul Wooton

Washington Correspondent of *Coal Age*

Sentiment in Washington early last week seemed to indicate that it was not certain that Congress would continue indefinitely to follow the President's policy of non-intervention in the hard-coal strike. When the second deadlock in peace negotiations between the operators and union leaders came and it was recognized that the Pennsylvania Legislature would do nothing there was insistent demand on each side of the Capitol for action. Now that conferences have been resumed, however, it is probable that action will be deferred awaiting the outcome.

Charges by Senator Reed, of Pennsylvania, that retail coal dealers are profiteering caused the District of Columbia Committee of the Senate to launch into an investigation of coal prices in Washington.

Senator Oddie, one of the administration regulars, plainly is becoming impatient. He is doing his best to conform to the administration policy but is being accused of strangling his own child in committee. He recognizes that there would be little opportunity to pass his bill without administration support, so is loath to add needlessly to the agitation by opening hearings. He does feel, however, that the executive branch in giving him no indication of what it thinks of his bill is leaving him to hold the bag.

Senator Borah made this point in the course of the debate in the Senate:

"In my opinion the fault of the situation lies here in the Congress rather than with the President. I think it up to the Congress of the United States to find the power if it exists; if it does not exist, to provide by a change of the instrument under which we live that it may exist, to the effect that people cannot seize the great natural resources of the country, without which we cannot live, and conduct them as if they were purely private affairs. It is impressed with a public service, and the government has the right to impress upon it the stamp of a public service. In time we will have to take that position in order to protect the people of the United States."

Freight Rates Attacked

Senator Reed and Senator Willis, of Ohio, told the Senate that freight rates are unduly preferential to the non-union mines. This led inter-mountain Senators to urge them to support the Gooding bill, prohibiting departures from the long-and-short-haul clause of the Interstate Commerce Act.

Senator Sackett, of Kentucky, denied that the long-haul rates to the lakes are lower but that the Southern mines gradually have been able to acquire some lake business and have been able to afford an opportunity to the people of the Northwest to buy coal on a competitive basis.

Senator Reed also had this to say:

"It has been intimated that the present situation is a conspiracy between

the operators and the miners to force a higher price on a long-suffering public. The very consideration of the situation in the hard-coal region shows the absurdity of that suggestion. The miners' suffering, the suffering of those people who are dependent upon them, and the suffering of all the community which owes its livelihood to this industry is so much greater than any possible increase in wages over the next five years could compensate for that it is obvious that the men have not entered into any such conspiracy. The losses of the operators during this period of suspension are so much greater than any possible increased profit during the next few years could compensate them for that it is equally obvious that they are not conspiring by that small profit to overcome the enormous present losses. The suggestion disproves itself."

Profiteering Charge Sifted

The Pennsylvania Senator's remarks as to profiteering on the part of retailers was prompted by a letter he received from the Clinton Block Coal Co., of Pittsburgh. In the letter exception was taken to an example cited by Senator Copeland where soft coal had cost \$17 a ton in Richmondville, N. Y. The Clinton company pointed out that nut and egg coal is selling for \$3 at the mine in the Pittsburgh district. The freight rate was added to show that the Richmondville retailer's margin was \$10.

Regret is expressed, however, that the Pennsylvania Senator should have attempted to defend coal producers by accusing retailers generally of profiteering. Such tactics have been resorted to by each branch of the industry in the past to the damage of all. Past experience has shown that it breeds popular suspicion when such charges are made by those who supposedly know the inside of the business.

In subsequent remarks Senator Reed, in pointing out the spread between the mine price and the price charged the ultimate consumer in the District of Columbia, failed to state that he was comparing net ton run-of-mine with a delivered gross ton of prepared fuel and that the business is accompanied by unusual risks in that a sudden end of the strike would leave the retailers with unsalable stocks.

Despite talk at the Capitol, it is apparent that any legislation which may be taken up will have a slim chance to get through. With the end of winter not far away and with consumers imbued as never before with a determination to get along, it is doubtful if any coal bill can be put on the statute books even were it to be given the administration's support.

Coal specialists in Washington are divided as to the probable duration of the strike. Some think the men are so anxious to see the mines resume operation that they are willing to leave the

Nova Scotia Wage Parley To Begin Feb. 1.

Negotiations preliminary to drawing up a new wage scale and working agreement between the British Empire Steel Corp. and the miners of District 26, United Mine Workers, which were held in abeyance pending the result of the Duncan Royal Commission report on the coal industry of Nova Scotia, will be entered into on Feb. 1, when a joint meeting of the Corporation and United Mine Workers executives will be held at Glace Bay.

The date was set by the union officials to follow the annual district convention of mine workers at Sydney, C. B., beginning Jan. 26, at which the commission's report was to be discussed.

settlement to arbitration. Unless Mr. Lewis recognizes this sentiment, they believe, the anthracite miners will demand autonomy, so that their own union may carry out such a program.

Others feel that the strength of the union is being underestimated and that the men still are loyal to the Lewis leadership and will make no concessions in the near future.

These Illinois Mines Lost Much Business in 1925

Although the 79 mines in the Fifth and Ninth Districts of Illinois, reporting to the Coal Operators' Association, have shown an increase in tonnage during November and December of 249,942 tons as compared to the same months in 1924, nevertheless these mines lost on the year's business 1,003,771 tons when compared with the preceding year.

Forty of the 79 mines worked an average of 36.12 per cent and stood idle 63.88 per cent of the time during the year. Thirty-nine of the mines were idle the entire year. Considering the 79 mines together, they have worked 18.3 per cent of possible working time during the year. In 1923 these 79 mines produced 12,823,138 tons. The 1925 output when compared with that of 1923 shows a loss of 3,256,095 tons.

West Virginia's 1925 Output Breaks All Records

Coal output in West Virginia in the calendar year 1925, according to a preliminary estimate, totaled more than 112,000,000 tons, the largest in the history of the state. Production by some of the fields was approximately as follows: Northern West Virginia, 24,000,000 tons; Pocahontas and Tug River, 25,000,000 tons; Winding Gulf, 9,000,000 tons; Williamson, 10,000,000 tons; Logan, 18,500,000 tons. Gains over 1924 in the New River district were about 2,700,000 tons; in the Kanawha field, 2,000,000 tons; Coal River, 800,000 tons; Logan, 2,500,000 tons.

Coal Produced in the Principal Countries of the World, Calendar Years 1922-1924*

(In metric tons of 2204.6 lb.)

	1922	1923	1924
North America:			
Canada { Coal.....	10,587,611	12,163,804	12,372,300
{ Lignite.....	3,162,907	3,249,605	2,500
Greenland.....	2,100	2,117	
Mexico.....	932,550	1,261,541	(a)
United States { Anthracite.....	49,607,344	84,675,282	79,765,491
{ Bituminous and Lignite.....	383,073,174	512,161,770	438,790,754
South America:			
Argentina.....	(a)	(a)	(a)
Brazil.....	500,000	324,154	268,157
Chile.....	1,053,001	1,164,028	1,522,228
Colombia.....	(a)	(a)	(a)
Peru.....	294,492	b/253,000	(a)
Venezuela.....	c/20,782	c/18,050	(a)
Europe:			
Austria { Coal.....	165,727	157,650	171,959
{ Lignite.....	3,135,902	2,685,467	2,752,300
Belgium.....	21,208,500	22,922,340	23,359,790
Bulgaria { Coal.....	46,725	61,600	69,670
{ Lignite.....	983,311	1,012,594	1,155,291
Czechoslovakia { Coal.....	10,464,990	12,347,251	15,178,942
{ Lignite.....	19,174,296	16,265,530	20,459,690
France { Coal.....	31,141,096	37,682,235	44,011,240
{ Lignite.....	772,014	861,435	944,080
Germany { Coal.....	d/129,964,597	62,316,134	118,828,644
{ Lignite.....	137,207,125	118,784,997	124,359,829
Saar.....	11,240,000	9,192,275	14,032,120
Greece—Lignite.....	131,515	126,000	129,530
Hungary { Coal.....	941,380	7,709,775	688,675
{ Lignite.....	6,776,230		5,741,655
Italy { Coal.....	195,352	173,700	21,855
{ Lignite.....	745,402	953,460	799,448
Netherlands { Coal.....	4,866,371	5,595,478	6,180,182
{ Lignite.....	28,919	54,185	191,202
Poland { Coal.....	e/23,974,814	36,097,997	32,224,680
{ Lignite.....	219,983	171,035	88,038
Portugal { Coal.....	127,279	137,613	124,802
{ Lignite.....	14,380	15,952	8,121
Rumania { Coal.....	254,642	291,983	297,288
{ Lignite.....	1,861,579	2,229,410	2,479,083
Russia.....	7,781,400	f/14,504,300	g/13,918,000
Spain { Coal.....	4,435,843	5,971,446	6,127,586
{ Lignite.....	329,680	394,268	411,773
Spitzbergen.....	315,000	340,942	451,914
Sweden.....	378,861	419,569	437,856
Switzerland.....	3,380	(a)	(a)
United Kingdom			
Great Britain.....	253,613,054	280,430,369	271,405,414
Ireland.....	(a)	(a)	(a)
Yugoslavia.....	3,726,568	4,001,265	4,185,240
Asia:			
British Borneo.....	88,948	(a)	(a)
China.....	22,681,000	19,955,000	20,969,000
Chosen.....	317,330	279,978	399,415
Dutch East Indies.....	1,032,310	1,156,625	1,470,362
Federated Malay States.....	286,351	322,994	378,778
India, British.....	19,316,112	19,972,376	21,516,491
Indo-China.....	988,991	1,056,921	1,235,880
Japan (including Taiwan & Karafuto) { Coal.....	29,163,727	30,417,012	31,617,277
{ Lignite.....	166,302	151,462	176,764
Philippine Islands.....	42,420	43,446	(a)
Russia.....	1,276,900	(f)	g/2,271,000
Turkey.....	681,000	(a)	(a)
Africa:			
Algeria.....	8,855	3,562	9,228
Belgian Congo.....	33,000	65,000	81,000
Nigeria.....	123,027	173,422	183,000
Rhodesia, Southern.....	467,787	559,999	591,526
Tunisia.....	343	620	305
Union of South Africa.....	8,830,774	10,810,897	11,331,125
Oceania:			
Australia			
New South Wales.....	10,346,572	10,646,693	11,804,688
Queensland.....	973,903	1,077,686	1,141,143
Tasmania.....	70,349	82,014	77,208
Victoria.....	660,113	603,240	656,170
Western Australia.....	445,480	427,466	428,635
New Zealand { Bituminous.....	983,981	950,715	1,102,418
{ Lignite.....	903,656	1,050,735	1,014,224
	1,225,500,000	1,359,900,000	1,354,300,000

* The term "coal" as here used includes lignite, and the production stated for the world is simply the total of quantities reported, no attempt being made to reduce the statistics for inferior coals to an equivalent tonnage of coals of higher rank. Where possible, however, coal and lignite are shown separately.

a/ Estimate included in total. b/ Includes a small quantity of asphaltite. c/ Exclusive of the output of the State of Falcon (about 8,000 tons), for which estimate is included in total. d/ Includes entire output of Upper Silesia for January-May inclusive; for June-December, inclusive, only that part of the province allocated to Germany. e/ Includes the output June-December, inclusive of that part of Upper Silesia allocated to Poland. f/ Russia in Asia included under Russian Europe. g/ Data for operating year, Oct. 1, 1923, to Sept. 30, 1924.

Annual World Production of Coal, 1911-1924

(In Metric Tons)

Year	Production (In Part Estimated)	Per Cent Produced By United States	Year	Production (In Part Estimated)	Per Cent Produced By United States
1911.....	1,189,000,000	37.9	1918.....	1,333,000,000	46.3
1912.....	1,249,000,000	38.8	1919.....	1,173,000,000	42.8
1913.....	1,342,000,000	38.6	1920.....	1,319,000,000	45.3
1914.....	1,207,000,000	38.7	1921.....	a 1,134,600,000	40.4
1915.....	1,193,000,000	40.5	1922.....	a 1,225,500,000	35.3
1916.....	1,291,000,000	41.5	1923.....	a 1,359,900,000	43.9
1917.....	1,356,000,000	43.6	1924.....	a 1,354,300,000	38.3

a Revised from earlier reports to conform with more accurate information on certain of the warring countries.

Engineers Adopt Ambitious Public Service Program

Dean Dexter S. Kimball of Cornell University was elected president of the American Engineering Council at the annual meeting of the Council in Washington, Jan. 13 to 15. Dean Kimball, past president of the American Society of Mechanical Engineers, succeeds former Governor James Hartness of Vermont. Gardner S. Williams, of Ann Arbor, Mich., and Irving E. Moulthrop, of Boston, were named vice-presidents. Mr. Williams being re-elected. Dr. Harrison E. Howe, of Washington, was re-elected treasurer, and Lawrence W. Wallace, of Washington, was again chosen executive secretary, a post he has held since the organization of the Council.

At its Washington meeting the Council approved a public works bill to be introduced in the Senate by Wesley L. Jones, of Washington, and in the House by Adam M. Wyant, of Pennsylvania. This measure would change the name of the Department of the Interior to the Department of Public Works and Domain. Four assistant secretaries are provided for, and numerous transfers to the new department of boards, bureaus, commissions and officers are made.

Plans for an organized attack on the problems of industry and agriculture, aiming to wipe out waste and to forestall possible economic disaster through dwindling labor supplies and crippled production, were framed. Five years would be required to carry out this program of research, continuing on a more extensive scale the "Assay of Waste" conducted by the Council in 1921 under the presidency of Herbert Hoover, Secretary of Commerce.

The Assembly of the Council adopted recommendations of the administrative board declaring "that the government should not trespass upon the field of industry unless it can be satisfactorily shown that the government can better engage in that business than private enterprise can."

It was voted to postpone action on the giant power report until further consideration could be given to it.

Future fuel supplies for the nation's industries and homes must be won through reforestation, Dean Mortimer E. Cooley of the University of Michigan, past president of the Council, said in an address at the closing session of the Assembly.

A large and distinguished gathering of engineers, public officials, economists and men of science attended the annual dinner of the Council at the Chevy Chase Club on the evening of Jan. 14. Vice-President Williams presided. The principal speakers were Secretary Hubert Work of the Department of the Interior, and Daniel R. Crissinger, Governor of the Federal Reserve Board. Secretary Work declared his agreement with the essentials of the public works bill. President Kimball also spoke.

The National Safety Council has moved its offices in Chicago to 108 East Ohio St. The transfer was made Jan. 1, 1926.

A.I.M.E. Will Discuss Coal Washing and Ventilation

When the 133rd session of the American Institute of Mining and Metallurgical Engineers meets, Feb. 15-18, at the Engineers' Societies Building, New York City, an outstanding interest will be the discussion of the progress and theory of mine ventilation, to which two sessions are to be devoted. Air-sand flotation, where coal floats on a sand stratum suspended in the air, is one of the interesting developments. It will be presented for the first time at this session.

The meeting on that subject, with G. S. Rice in the chair, opens Feb. 15 at 9:30 a.m., and after his report and that of E. A. Holbrook, the secretary, Graham Bright will report for the subcommittee on fans and L. W. Huber will speak on "Mine Fan Characteristics." Ole Singstad will make an address on the New York-New Jersey Vehicular Tunnel. The afternoon session will be steered by R. R. Sayers, who will open with a report on the proposed activities of the subcommittee on physiological studies and an address on "Permissible Limits of Toxic and Noxious Gases in Mine and Tunnel Ventilation."

A. C. Callen will report on the present and future activities of the subcommittee on the physics of ventilation, and G. E. McElroy will discuss the report of the British Institution of Mining Engineers on the "Theory of Ventilation." Frank Haas will present a report on the present and future activities of the subcommittee on coal-mine ventilation, for which discussion is being prepared by E. A. Holbrook, J. W. Paul, D. Harrington and others. B. B. Gottsberger will make a report similar to that of Mr. Haas but in regard to metal mining, and G. E. McElroy will discuss that subject.

On Tuesday under C. M. Lingle's leadership a report will be made by H. N. Eavenson for the coal and coke committee. On Wednesday R. H. Sweetser will preside at a meeting in the course of which T. M. Chance will describe the "Mt. Union Sand Flotation Plant for the Preparation of Bituminous Coal." Thomas Fraser will describe the newly developed "Air-Sand Process of Cleaning Coal." A. C. Fieldner will deliver an address on the "Relation of Ash Composition to the Uses of Coal" and A. C. Noe one on "Coal Balls." "The Explosibility of Coal and Other Dust in a Laboratory Steel Gallery" will be discussed by V. C. Allison.

The committee on education will meet at luncheon at 12:15 and a round-table discussion led by E. A. Holbrook will follow. The industrial relations committee at 2 p.m. will canvass the question of "Employee Stock Ownership" under the direction of C. A. Meissner and the leadership of George E. Roberts, of the National City Bank. H. N. Eavenson will discuss "Coal-Mine Subsidence" in the ground movement and subsidence meeting, also at 2 p.m. W. E. Fohl will assemble a committee at the same moment to study the methods for the drilling of oil and gas wells through coal beds.

On Monday evening a smoker will

Straw Briquets Seen As Minor Rival to Coal

Straw compressed into briquets under 833 lb. pressure per square inch in laboratory experiments at the Kansas State Agricultural College, Manhattan, Kan., has proved to have about one-half the heating value of coal and may partly supplant it as a fuel in midwestern homes, according to W. H. Sanders, professor of agricultural engineering of the college.

Professor Sanders has invented a machine that can be constructed at little cost, operated on the same principle as a hay baler, which has had fair success in this undertaking. Professor Sanders says that under tests at the college engineering department it was found that 70 per cent of the heat content of the straw was utilized.

be held at the Mecca Temple Mosque and on Wednesday the annual banquet is scheduled. On Thursday the members will motor up the Hudson River, across the Bear Mountain bridge and back. The ladies will have a continuous program of entertainment throughout the meetings. It may be added that all those interested in the matters discussed by the various committees of the A. I. M. E. to which reference has been made are welcome to attend and take part in the proceedings.

Would Probe Coke Prices In New York State

Investigation by the State Coal Commission of the price of coke and the marketing thereof in New York State is provided for in a resolution introduced in the State Senate at Albany Jan. 20 by John J. Dunnigan, Democrat, of the Bronx, New York City.

The resolution recites that "It is charged that the price of coke at the ovens both inside and outside the state is \$12 a ton, whilst the freight rate from ovens in the City of Troy to the City of New York is \$2.39 per net ton with comparative freight charges to and from other points. Despite this cost of \$14.39 or thereabouts to the dealer, the latter is retailing coke in bushels in New York City and Westchester at 70c. or at a rate per ton of from \$22 to \$28, thereby realizing a profit of from \$8 to \$14 on the ton. It is obvious that such a charge to the consumer is exorbitant and is permissible only because the retail business is unregulated and unrestricted."

The resolution was referred to the Committee on Finance.

Resumption of dividend payments on the preferred stock of the Consolidation Coal Co. was announced Jan. 20. Directors declared a dividend of \$1.75 a share, payable Feb. 20, to stockholders of record Feb. 10. This dividend was due to have been paid June 1, 1925. A total of \$3.50 in dividends is overdue on this issue.

December Coke Production Highest On Record

Output of byproduct coke in the United States during December, according to reports by the operators to the U. S. Bureau of Mines, amounted to 3,760,000 net tons, an increase of 203,000 tons, or 5.7 per cent, compared with the preceding month. During the month of December, the daily output increased to 121,305 tons, a gain of 2,729 tons, or 2.3 per cent, compared with the November rate. The coke plants operated at about 91 per cent of capacity. With the inclusion of the new plant at Troy, N. Y., and the rebuilt plant at Chester, Pa., the total number of byproduct plants now in existence is 80, of which 74 were active during the month. The current output is the highest on record for any month.

Beehive coke production continued to increase during December, the total being estimated at 1,307,000 net tons, an increase of 94,000 tons, or 7.7 per cent, compared with the month of November.

Production of all coke amounted to 5,067,000 tons, the byproduct plants contributing 75 per cent, the beehive plants the remainder.

Monthly Output of Byproduct and Beehive Coke in the United States*

(In Thousands of Net Tons)

	By-product Coke	Bee- hive Coke	Total
September, 1925.....	3,185	746	3,931
October, 1925.....	3,402	1,006	4,408
November, 1925.....	3,557	1,213	4,770
December, 1925.....	3,760	1,307	5,067
1923 monthly average....	3,133	1,615	4,748
1924 monthly average....	2,833	806	3,639
1925 monthly average....	3,332	893	4,225

* Excludes screenings and breeze.

The total amount of coal consumed in both beehive and byproduct coke plants amounted to 7,465,000 tons, 5,403,000 tons being consumed at byproduct plants, and 2,062,000 tons at beehive plants. This December total is 435,000 tons greater than the monthly average for 1923.

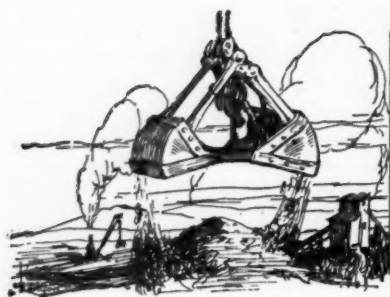
Estimated Monthly Consumption of Coal in Manufacture of Coke

(In Thousands of Net Tons)

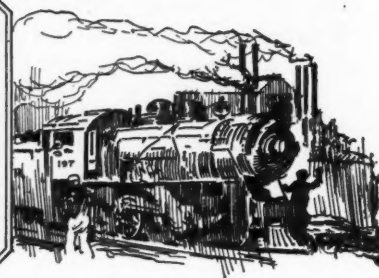
	Con- sumed in By- product Ovens	Con- sumed in Bee- hive Ovens	Total Coal Con- sumed
September, 1925.....	4,576	1,177	5,753
October, 1925.....	4,888	1,587	6,475
November, 1925.....	5,111	1,913	7,024
December, 1925.....	5,403	2,062	7,465
1923 monthly average....	4,523	2,507	7,030
1924 monthly average....	4,060	1,272	5,332
1925 monthly average....	4,787	1,371	6,158

Of the total output of byproduct coke during December, 1925, 3,118,000 tons, or 82.9 per cent, was made in plants associated with iron furnaces, and 642,000 tons, or 17.1 per cent, was made at merchant or other plants.

Removal of coal from deposits on public lands without having obtained the necessary rights under the Minerals Leasing Act is made a misdemeanor in a bill proposed by Representative Sinnott, chairman of the Public Lands Committee. The bill was introduced at the request of the Interior Department.



Production And the Market



Strong Demand Absorbs Soaring Coal Output; High Coke Prices Rouse Criticism

The temper of the spot bituminous coal market as January draws to a close shows a sharp territorial division. In the Middle Atlantic and New England states activity is largely controlled by developments in the anthracite strike controversy. In the states farther west the weather is the dominant factor. This is true not only of the domestic business but also is highly influential in the trend of open-market industrial buying.

The bulk of the business, however, does not appear in the spot market. It shows up when production figures are made public. This under-cover purchasing, either on contract or through channels so silent that the same relationship might just as well exist, and the heavy shipments from captive operations account for the record outputs during the present month. Output in the week ended Jan. 16, according to the Bureau of Mines, totaled 13,073,000 net tons. Revised figures for the week preceding were 13,030,000 tons.

Buying Reaches Record Proportions

When it is remembered that the maximum record, made in the week ended Oct. 25, 1919, was only 13,344,000 tons and that the 13,000,000-ton mark was passed just twice in the six years following, the record of the current month becomes significant. Part of this heavy output, of course, represents the substitution of bituminous coal for anthracite, but this substitution does not cover the major increases. These must be credited to a sustained industrial demand that gives real substance to the reports of national prosperity and holds out hope for better things to the bituminous coal trade.

There is still, however, a slight maladjustment between prices and demand, except in cases where the former are rigidly maintained as a matter of principle and trade stability. Gambling on the weather in the

West and on the turn of the anthracite negotiations in the East, both buyer and seller have at times overplayed their hands. Reluctant purchasers of West Virginia low-volatile lump and egg have paid for their tardiness in higher prices. Over-eager shippers of screened coal from the Appalachian field have found slack backing up on them. "No bills" are still the rule at Middle Western mines and the Southwest and the Far West do not escape.

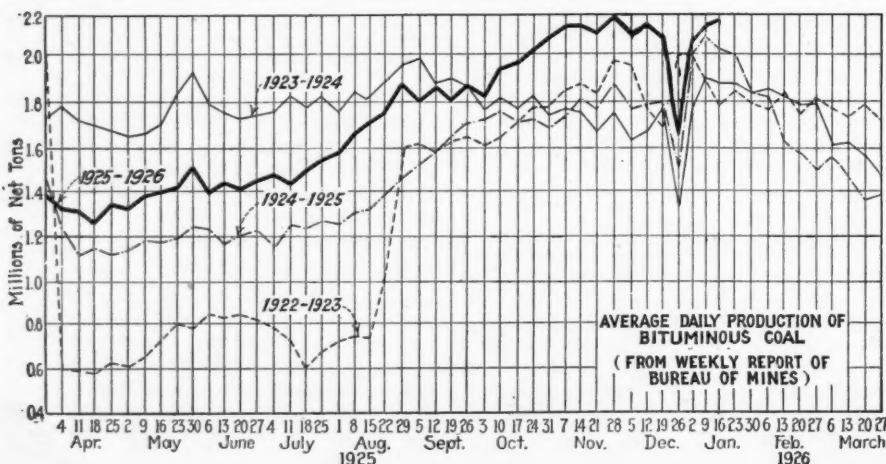
Price Bulges Not Unmixed Evil

But the price situation is not without its compensations. The extra demand put upon low-volatile West Virginia coals in the territory opened up by the emergency all-rail rates has reacted to the benefit of the sorely distressed central Pennsylvania field. A number of consumers, rebelling against \$6 and \$7 Pocahontas and New River lump on the one hand and \$12 and \$13 coke on the other, have turned to Pennsylvania for relief. Some of the high-volatiles also have enjoyed a wider market because of price differentials.

More criticism is leveled at the coke ovens than at any other factor in the trade at the present time. The critics are a unit in denouncing current quotations as distinctly out of line. When blast furnaces controlled by coke producers are banked so that the coke tonnage may be diverted to the domestic market at sky-rocketing prices, even the best friends of the coke people are convinced that the ovens are injuring their own future.

Coal Age Index of spot prices of bituminous coal on Jan. 25 stood at 178, the corresponding price being \$2.16, compared with 181 and \$2.20 on Jan. 18.

Dumpings at Hampton Roads dropped to 407,625 net tons the week ended Jan. 21. The total the preceding week was 433,560 tons.



Estimates of Production

(Net Tons)

BITUMINOUS

	1925	1926
Jan. 2	10,810,000	10,667,000
Jan. 9 (a)	12,590,000	13,030,000
Jan. 16 (b)	12,044,000	13,073,000
Daily average	2,007,000	2,179,000
Coal yr. to date	(c) 371,858,000	423,025,000
Daily av. to date	1,526,000	1,731,000

ANTHRACITE

Jan. 2 (a)	1,255,000	28,000
Jan. 9	1,785,000	47,000
Jan. 16 (b)	1,803,000	32,000
Coal yr. to date	(c) 68,486,000	40,568,000

BEEHIVE COKE

Jan. 9 (a)	265,000	290,000
Jan. 16 (b)	262,000	310,000
Calendar yr. to date	(c) 612,000	697,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

Mid-West Pins Hopes on Weather

Middle Western producers are hoping that the week-end cold snap will quicken a sluggish trade. Illinois operators are holding to established prices in the face of badly broken running time and a heavy accumulation of "no bills." The market on screenings again has declined despite curtailed output. Some Indiana operators are so well sold up on lump that they will accept additional orders only when the buyer will take smaller sizes as well. Western Kentucky prices have slumped in sympathy with a further weakened demand.

From the standpoint of the Chicago trade, the smokeless shippers are the only ones who are benefiting from the situation arising out of the anthracite strike. Nevertheless Pocahontas lump is still offered freely in the Western market. West Virginia bituminous operators are making bargain-counter offers on large lump in order to keep their mines going to take advantage of Eastern demand for the smaller prepared sizes. Slack, too, is backing up on some of these shippers.

There is little activity in the eastern Kentucky fields. Prices have been helped somewhat by complaints of car shortage, but no great buying pressure has been exerted.

Reports from the southern Illinois mining fields show that there has been a slight increase in the movement of

lump coal since colder weather set in, but egg is still draggy and nut and screenings are distinctly slow. There seems to be ample transportation facilities to take care of current demand.

During the holiday period there were further curtailments in operations at the shaft mines in the Franklin, Williamson and Saline County districts. The past few days, however, have witnessed a slight improvement. Stripping mines still have the better of the argument in so far as steady running time is concerned although the snow and ice last week slowed up work at the pits.

Light railroad buying has been taking toll of the deep mines in Jackson and Duquoin, as well as in the Franklin and Carterville fields. There is still a large accumulation of unbilled coal at the mines—a handicap under which Perry and Jackson Counties have labored for many months.

Mt. Olive domestic sizes have been in better demand the past few days, but steam trade is backward. Prices on prepared coals in the St. Louis market were cut from \$2.75 to \$2.50 ten days ago and there are reports that one or two southern Illinois producers have started shading prices.

The market on Standard screenings is down to \$1@\$.10, with demand very light. Mines relatively free of "no bills" are holding 2-in. lump to a \$2.10 minimum. The domestic demand, however, is concentrated on 6-in. coal. Railroad buying is light. Mines doing 50 per cent or better in the

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern				Midwest			
Market	Quoted	Jan. 26, 1925	Jan. 11, 1926	Jan. 18, 1926	Market	Quoted	Jan. 26, 1925
Smokeless lump.....	Columbus....	\$3.85	\$3.85	\$4.10	Franklin, Ill. lump.....	Chicago.....	\$3.60
Smokeless mine run.....	Columbus....	1.90	2.95	2.75	Franklin, Ill. mine run....	Chicago.....	2.35
Smokeless screenings.....	Columbus....	1.20	2.60	2.00	Franklin, Ill. screenings....	Chicago.....	1.85
Smokeless lump.....	Chicago.....	4.00	3.85	3.85	Central, Ill. lump.....	Chicago.....	3.00
Smokeless mine run.....	Chicago.....	2.00	2.10	2.10	Central, Ill. mine run....	Chicago.....	2.20
Smokeless lump.....	Cincinnati....	4.10	4.10	4.50	Central, Ill. screenings....	Chicago.....	1.45
Smokeless mine run.....	Cincinnati....	2.00	2.35	2.50	Ind. 4th Vein lump.....	Chicago.....	3.10
Smokeless screenings.....	Cincinnati....	1.10	2.00	1.60	Ind. 4th Vein mine run....	Chicago.....	2.35
*Smokeless mine run.....	Boston.....	4.45	4.85	4.90	Ind. 4th Vein screenings....	Chicago.....	1.55
Clearfield mine run.....	Boston.....	1.95	1.90	1.95	Ind. 5th Vein lump.....	Chicago.....	2.60
Cambria mine run.....	Boston.....	2.30	2.25	2.40	Ind. 5th Vein mine run....	Chicago.....	2.10
Somerset mine run.....	Boston.....	2.10	2.05	2.10	Ind. 5th Vein screenings....	Chicago.....	1.40
Pool 1 (Navy Standard)...	New York....	2.75	2.95	3.05	Mt. Olive lump.....	St. Louis....	3.00
Pool 1 (Navy Standard)...	Philadelphia..	2.80	2.95	3.15	Mt. Olive mine run.....	St. Louis....	2.35
Pool 1 (Navy Standard)...	Baltimore....	2.25	2.30	2.30	Mt. Olive screenings....	St. Louis....	1.80
Pool 9 (Super. Low Vol.)...	New York....	2.15	2.30	2.40	Standard lump.....	St. Louis....	2.45
Pool 9 (Super. Low Vol.)...	Philadelphia..	2.20	2.30	2.50	Standard mine run.....	St. Louis....	1.95
Pool 9 (Super. Low Vol.)...	Baltimore....	1.85	2.15	2.15	Standard screenings....	St. Louis....	1.15
Pool 10 (H.Gr. Low Vol.)...	New York....	1.85	2.05	2.15	West Ky. block.....	Louisville..	2.55
Pool 10 (H.Gr. Low Vol.)...	Philadelphia..	1.85	2.05	2.25	West Ky. mine run.....	Louisville..	1.55
Pool 10 (H.Gr. Low Vol.)...	Baltimore....	1.70	1.95	1.95	West Ky. screenings....	Louisville..	1.10
Pool 11 (Low Vol.).....	New York....	1.60	1.80	1.85	West Ky. block.....	Chicago.....	2.40
Pool 11 (Low Vol.).....	Philadelphia..	1.65	1.90	2.05	West Ky. mine run.....	Chicago.....	1.50
Pool 11 (Low Vol.).....	Baltimore....	1.50	1.70	1.70			

High-Volatile, Eastern				South and Southwest			
Market	Quoted	Jan. 26, 1925	Jan. 11, 1926	Jan. 18, 1926	Market	Quoted	Jan. 26, 1925
Pool 54-64 (Gas and St.)...	New York....	1.50	1.60	1.60	Big Seam lump.....	Birmingham..	2.85
Pool 54-64 (Gas and St.)...	Philadelphia..	1.50	1.60	1.65	Big Seam mine run.....	Birmingham..	1.75
Pool 54-64 (Gas and St.)...	Baltimore....	1.65	1.65	1.65	Big Seam (washed).....	Birmingham..	1.75
Pittsburgh ac'd gas.....	Pittsburgh....	2.35	2.65	2.65	S. E. Ky. block.....	Chicago.....	2.60
Pittsburgh gas mine run...	Pittsburgh....	2.10	2.10	2.10	S. E. Ky. mine run.....	Chicago.....	1.50
Pittsburgh mine run (St.)...	Pittsburgh....	1.95	2.05	2.05	S. E. Ky. block.....	Louisville..	2.75
Pittsburgh slack (Gas)...	Pittsburgh....	1.50	1.55	1.50	S. E. Ky. mine run.....	Louisville..	1.35
Kanawha lump.....	Columbus....	2.50	2.25	2.25	S. E. Ky. screenings....	Louisville..	.85
Kanawha mine run.....	Columbus....	1.60	1.70	1.70	S. E. Ky. block.....	Cincinnati..	2.75
Kanawha screenings.....	Columbus....	.75	1.05	.90	S. E. Ky. mine run.....	Cincinnati..	1.40
W. Va. lump.....	Cincinnati....	2.15	3.00	2.75	S. E. Ky. screenings....	Cincinnati..	.90
W. Va. gas mine run.....	Cincinnati....	1.30	1.60	1.55	S. E. Ky. block.....	Cincinnati..	1.40
W. Va. steam mine run....	Cincinnati....	1.30	1.50	1.60	S. E. Ky. mine run.....	Cincinnati..	.90
W. Va. screenings.....	Cincinnati....	.80	1.10	1.10	S. E. Ky. screenings....	Cincinnati..	.90
Hooking lump.....	Columbus....	2.50	2.35	2.35	Kansas lump.....	Kansas City..	4.85
Hooking mine run.....	Columbus....	1.60	1.85	1.85	Kansas mine run.....	Kansas City..	3.35
Hooking screenings.....	Columbus....	1.10	1.20	1.20	Kansas screenings....	Kansas City..	2.50
Pitta. No. 8 lump.....	Cleveland....	2.30	2.30	2.30			
Pitta. No. 8 mine run....	Cleveland....	1.85	1.80	1.80			
Pitta. No. 8 screenings....	Cleveland....	1.35	1.45	1.40			

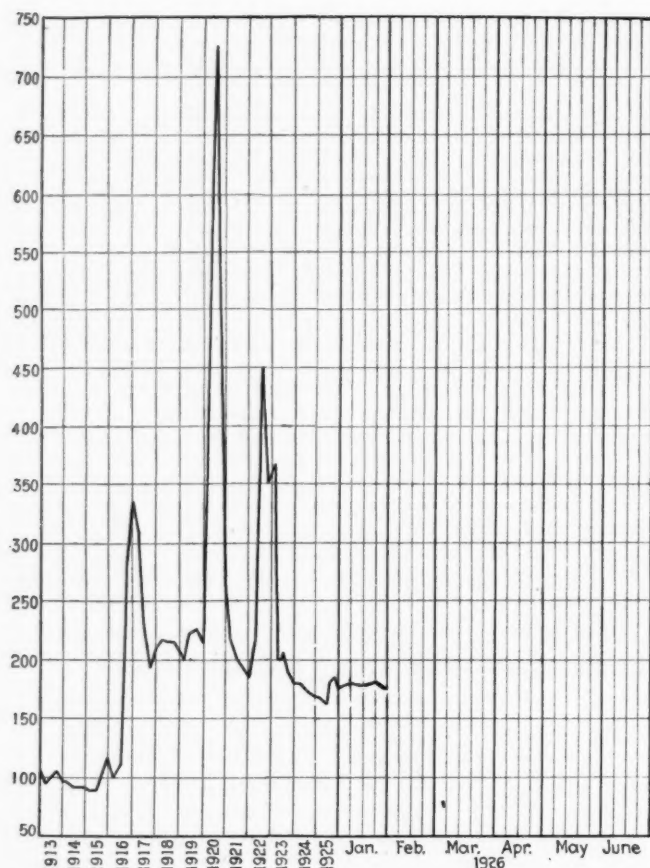
* Gross tons, f.o.b. vessel, Hampton Roads.

† Advances over previous week shown in heavy type; declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

Market		Jan. 26, 1925		Jan. 18, 1926		Jan. 25, 1926†	
Quoted	Freight Rates	Independent	Company	Independent	Company	Independent	Company
Broken.....	New York.....	\$2.34					
Broken.....	Philadelphia..	2.39					
Egg.....	New York.....	2.34	\$8.50@9.25				
Egg.....	Philadelphia..	2.39	9.45@9.75				
Egg.....	Chicago.....	5.06	8.17@8.40				
Stove.....	New York.....	2.34	9.75@10.25				
Stove.....	Philadelphia..	2.39	10.10@10.75				
Stove.....	Chicago.....	5.06	8.80@9.00				
Chestnut.....	New York.....	2.34	9.75@10.50				
Chestnut.....	Philadelphia..	2.39	10.00@10.75				
Chestnut.....	Chicago.....	5.06	8.61@9.00				
Pea.....	New York.....	2.22	4.75@5.50				
Pea.....	Philadelphia..	2.14	5.75@6.00				
Pea.....	Chicago.....	4.79	5.36@5.75				
Buckwheat No. 1.....	New York.....	2.22	2.25@3.00				
Buckwheat No. 1.....	Philadelphia..	2.14	2.50@3.00				
Rice.....	New York.....	2.22	2.00@2.35				
Rice.....	Philadelphia..	2.14	2.00@2.25				
Barley.....	New York.....	2.22	1.40@1.65				
Barley.....	Philadelphia..	2.14	1.50				
Birdseye.....	New York.....	2.22	1.60@1.75				

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type; declines in italics.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926			1925
	Jan. 25	Jan. 18	Jan. 11	Jan. 26
Index	178	181	180	173
Weighted average price.....	\$2.16	\$2.19	\$2.18	\$2.09

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.

matter of running time are the fortunate exceptions to the general rule.

In the St. Louis local market, domestic demand has recovered from the holiday slump. The poorer sections of the city are buying some Standard coal, but the bulk of the tonnage moving through retail channels is of higher grade. There is a fair demand for smokeless coal and a brisk call for coke. Medium grades are moving to the country trade. Illinois, northwestern Missouri and Iowa are in the market for western Kentucky coals. Carload steam demand in St. Louis territory is weak.

Higher Temperatures Hurt Kentucky

Mild weather on the heels of the holiday lull has hit the Louisville market a sharp blow. Eastern Kentucky appears to have suffered more in the slump than the western part of the state. Some eastern block has been quoted as low as \$2.40, although the general range has been \$2.50@\$2.75, with some well-known brands commanding as high as \$3.25.

The heavier demand for prepared coal prior to the recent slump is reflected in the market on screenings. Large industrial consumers are playing a hand-to-mouth buying game, relying upon stockpiles to beat any brief bulges in prices and replenishing their reserves on the downward dips of the market. Producers are hopeful that the heavy industrial consumption of fuel will force the steam plants to buy more freely. The industrial purchasing agents, however, seem to be acting on the assumption that the price trends the rest of this coal year will be a repetition of those of preceding years.

Despite some anxiety in recent months, the car situation on the whole has been favorable. Labor, too, is plentiful

and apparently contented. There has been some slowing up in strip-pit mining because of weather conditions, but that is expected at this time of the year.

Dock Operators Marking Time

It has been largely a case of marking time on the part of the docks at the Head of the Lakes since the middle of the month. Mild weather has taken the edge off the consumers' desire to purchase coal. Both the retailers and the steam coal buyers in Minnesota, northern Wisconsin and North Dakota, who received substantial shipments during the first half of January, are niggardly in placing additional orders.

Retailers justify their policy on the ground of credit conditions. For their part, dock operators are not inclined to force the situation as they, too, are watching collections closely. As a result, there are fewer past due accounts on the books than for several years.

Notwithstanding the tendency toward shipments in small lots, the total movement has been comfortably large. Prompt service by the railroads has made it possible to keep the trade supplied. Nevertheless, the docks are making special efforts to reduce the accumulation of coal carried. These stocks are estimated at 4,900,000 tons. Only two dock operators have any anthracite on hand. That tonnage is confined to a limited quantity of chestnut, reserved for consumers with base-burner stoves.

The movement of Pocahontas coal for domestic purposes has been steadily increasing. Reserve stocks, however, are liberal and the market is easier, although prices have not been cut. In view of the failure of anthracite operators and miners to come to an agreement, it is felt that there will be no occasion to shade these quotations, which stand at \$8.50, f.o.b. docks, on lump, egg and nut and \$5 on mine-run. Kentucky screened lump is \$6@\$6.50; stove, \$6@\$6.25; dock-run, \$5.75@\$6, and screenings, \$4.25.

Dock managers and retail dealers report the fuel situation in Milwaukee unchanged. There is plenty of bituminous coal, and consumers are having no difficulty in procuring coke and Pocahontas. The local coke plant is allocating to dealers in order to insure proper distribution under the circumstances, and so far as can be seen there is no likelihood of any hardship for the public on the score of fuel shortage.

Mercury Helps Southwest Markets

Again winter has come to the aid of Southwestern operators. Business is beginning to pick up in Arkansas, and Kansas lump, the price of which had begun to break, again is held steady at \$5. Production has been steady through the season. While the winter has been mild, low temperatures have cleared tracks of "no bills" periodically and stacked up orders sufficient to carry operators well into another period of warm weather.

In the late domestic depression, when Kansas lump was quoted off 25c. by some operators, screenings were advanced to \$2.50 by many, with a tendency, as lump began to move, to revert to \$2.35.

Colorado mines still struggle under the handicap of retarded domestic buying induced by unseasonable temperatures in Missouri River territory. For the field as a whole the running time does not exceed 80 per cent. There is a surplus of unbilled domestic loads on the mine tracks awaiting buyers. The steam coal market, too, is backward. Prices remain unchanged.

Utah Has Good Demand from Pacific Coast

The coal business is improving in Utah following the first real snowstorms of the present winter season. Stove coal was in greater demand than any other size immediately prior to the coming of the snow, but this size is expected to give way now to furnace and domestic lump. Some of the producers are behind on their stove orders. A good demand from the Pacific Coast contributed to a considerable extent to the scarcity.

Slack, too, has been none too plentiful, but with the increased working time at the mines, which the more wintry weather will make possible, this situation is expected to improve at once. There is plenty of coal on hand at some of the mines, if not all, and many "no bill" cars on the tracks, including various grades of coal. Prices remain steady, the car situation is satisfactory and there is an abundance of labor at the mines.

Cold Snap Saves Cincinnati Trade

A cold snap the latter part of the week arrived just in the nick of time to save the price list in Cincinnati from what might have been positive embarrassment. For four or five days the values had been melting under the influence of a stoppage of trade caused by warm weather. The crumbling of the market started even before that. Detroit and northern Ohio markets were gorged beyond capacity and radical price drops naturally followed. Distress stuff went overboard first, demurrage tonnage followed. Slack and run-of-mine bore the brunt with some reductions on egg, stove and smaller prepared sizings.

Overproduction, of course, played a part, but not in the movement through the Cincinnati gateways. The report of the American Railway Association showed only 12,326 cars passed through, or 139 cars more than last week and a decrease of 686 cars compared with last year. Louisville & Nashville loadings decreased 1,032 cars and since the report was issued the Chesapeake & Ohio reports show dozens of mines down in the Big Sandy, Elkhorn and on the main line. So, it would appear that it is the coal above ground rather than the coal freshly mined that figures most in tipping the market.

In the low-volatile section screenings have dropped to \$1.25@1.50, mine-run is weak at \$2.25; but Eastern demand has pushed egg, stove and nut to \$5.50, as compared with Western contract deliveries at \$4.25 and spot around \$4.75 @ \$5. Lump for Western shipment is \$4@4.25; east 25 to 50c. higher. Nearly all of the producers say that with the exception of screenings they have orders and contracts booked now to carry them over into February.

High-volatile slack and mine-run suffered most in the recent slump. Some distress screenings went down to 50c. Mine-run was freely offered at \$1.25 for steam and \$1.40 for byproduct and gas. Egg went as low as \$1.75, but block and large lump held fairly firm, West Virginia selling on a range of \$2.50@2.75 and Kentucky \$2.75@3.25.

There have been no retail changes in price here. River business again is halted by weather conditions.

The mercury again controlled the destinies of the domestic market in southern Ohio last week and the predicted cold wave came too late to help either prices or demand. The retailers are buying only when absolutely necessary and they find that the stocks they are now carrying are ample to meet the householders' orders.

The retailers are keeping a close watch upon credits, which in some cases have been overextended. Most of the consumer buying now is held down to one- and two-ton lots. Retail prices, however, have not declined. Smokeless lump is selling for \$9.50@10; splint, \$7@7.50; Hocking and Pomeroy Bend, \$6@6.50; Kentucky block, \$7.25@7.50. Demand farther east is limiting the tonnage of smokeless egg running to Columbus retail dealers.

Industrial demand for southern Ohio coal continues lethargic. Prices are irregular. Some distress coal finds its way to market, but the quantity is much smaller than usual under like conditions. Mine-run was shaded 10c. during the week. West Virginia screenings were easy at about 75c. Public utility and steel plant buying are the backbone of the existing steam market, but the purchasing agents for these institutions are not spendthrift buyers. There is little talk of new contracts.

Southern Ohio production last week was approximately 22½ to 25 per cent of capacity. Pomeroy Bend mines working on the 1917 wage scale captured a large share of this tonnage.

Despite cold weather in eastern Ohio a softening tendency has prevailed in f.o.b. prices on Ohio coal. Cleveland retailers, however, have been rather busy filling orders from householders, but the major portion of this is West Virginia and Kentucky coal.

The feature of the week has been the weakness in spot prices on slack and nut-and-slack. Nevertheless, steam inquiries are stronger because of low stocks and indications that business conditions with industry are beginning to show some improvement. Railroad purchasing is held to contract commitments. There is little distress coal.

Eastern Ohio production for the week ended Jan. 16 aggregated 286,000 tons or about 41 per cent of potential capacity. This was 9,000 under the output of the preceding week but is 9,000 tons over output of the corresponding week a year ago.

Gloom Still Heavy in Pittsburgh

The Pittsburgh district coal market continues in decidedly poor shape. There has been no improvement in the past week, when in some quarters there was expectation of improvement, based in part on the fact that the call for Connellsville coke brought about such high prices that the demand might overflow into bituminous, as it did on the last coke bulge, late in October. What little demand comes from the East is for egg, which brings about \$2.50.

Demand for domestic coal is good in a sense, but the area of distribution is so limited that the total tonnage is small relative to the capacity of the region. Industrial consumption is heavy. The steel industry ran at a very high rate in November and December and is doing as well this month.

Coal prices are not quotably changed, except that slack has sagged off a trifle farther.

Failure to end the anthracite strike has materially increased production in the central Pennsylvania bituminous field and prices have stiffened quite materially. The additional demand, however, is far from taxing the capacity to furnish fuel. All grades of coal are affected by the rise in prices, the latest quotations at the mines running as follows: Pool 18, \$1.80@1.90; pool 11, \$2@2.20; pool 10, \$2.35@2.50; pool 9, \$2.55@2.80; pool 71, \$2.80@2.90; pool 1, \$2.95@3.10. Lump is \$4.75; egg, \$5@5.50; nut, \$5@5.25; slack, \$2.

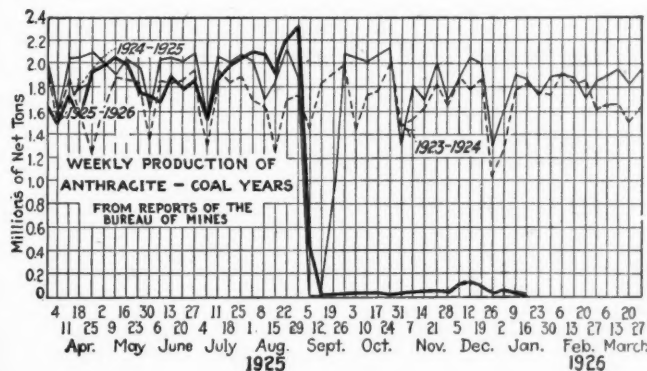
Deadly indifference characterizes the attitude of the industrial coal consumer toward sellers in the Buffalo market. In many cases, it is claimed, steam plants are making no pretense of carrying proper storage reserves against winter interruptions to transportation. Prices show a monotonous regularity. Fairmont lump is quoted at \$1.60@1.75; mine-run, \$1.40@1.50; slack, \$1.25@1.40; Youghiogheny gas and No. 8 steam lump, \$2@2.25; slack, \$1.30@1.60; short-rate Allegheny Valley mine-run, \$1.75@2.

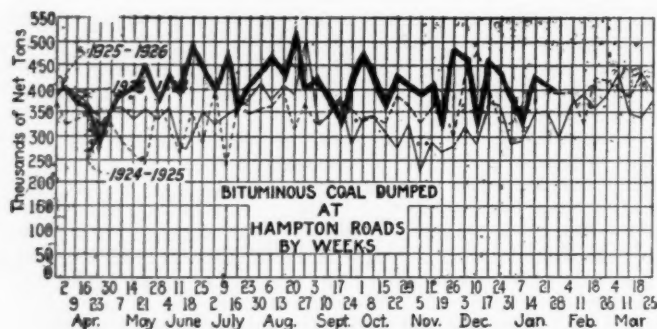
Anthracite Rumors Govern New England

The immediate reaction from the anthracite settlement rumor on Friday was enough to show how dependent the New England market is on day-to-day conditions. Prices of screened bituminous dropped 50c.@1 within an hour or two, not to speak of cancellations that poured in, and it will take another ten days to recover. The absence of severely cold weather has already influenced retail dealers to discount local demand during February. Operators who refrained from commitments beyond January are again scurrying about to place tonnage.

Were the anthracite controversy settled the market for substitutes would flatten out over night. Deliveries have slowed up materially, especially from the smokeless districts all-rail, and buyers generally are cautious in arranging for their probable needs. Splints and other hard-textured high volatiles are less in demand than was the case a fortnight ago. Prepared low volatile enjoyed a buoyancy that had not been seen since November, as high as \$7 per net ton being paid at the mine for No. 1 egg, but now the range is \$5@5.50, keeping pace with high grade low volatiles in Pennsylvania that are to be had at from \$5.50 up, although on the minimum Clearfield rate.

F.o.b. vessel at Hampton Roads there has been no corresponding fluctuation in price. Coastwise movement is fair, owing to current demand from retailers inland from Boston, Providence and other rehandling ports, but it can hardly be said there is any improvement among the industries. Neither all-rail nor by water is there any noticeable call for Pennsylvania coals.





Bituminous More Active at New York

Activity ruled the bituminous coal market at New York last week. Prices were firm and buying of all grades increased. Industrial consumers kept mine-run moving while householders who formerly used anthracite took a fair amount of sized coal and some mine-run. The cream of the domestic trade and the volume too, however, went to coke.

Prices on high-volatile run of mine fluctuated within a narrow range, leaving practically no net change. Quotations on low-volatile were stronger. This was true also of the prepared sizes of high-volatile coal moving into this territory on the Pittsburgh rate. These commanded about \$3.25—an advance of \$1 within a few weeks. Low-volatile nut was quoted at \$5.50@6; Broad Top mine-run up to \$3 and screened coals from this Pennsylvania district at approximately \$7 on the average, with a few shippers asking as high as \$8. B. R. & P. and Shawmut offerings were on a mine-run basis of \$1.85@2.25.

The New York market is taking more prepared New River and Pocahontas coals for domestic purposes and paying up to \$6.50.

Arrivals at the local piers have not been heavy during recent weeks. Some complaint was heard of close deliveries, but no hardship has been experienced.

Greater activity also was the rule in Philadelphia. With the collapse of the anthracite negotiations on Jan. 12 and the approach of the time when consumers would be calling for fresh supplies to tide them over for the rest of the winter, retailers began to cash in on their missionary efforts to sell mine-run. On top of this came a growing demand from industries which normally depend upon anthracite steam sizes. Further tenseness was added to the situation by the suggestion of congestion in transportation service.

Each week sees more call for prepared sizes of Pocahontas and New River coals in the Philadelphia market. There is little surplus available and quotations have jumped from \$4.50 to \$6 and \$7 within a fortnight. Central Pennsylvania low-volatiles have benefited from this advance as dealers who have been unable to buy all the West Virginia coal they desired have turned to the Pennsylvania product with satisfactory results.

Screened gas coal also has moved up several notches in price. Coal selling ten days ago at \$2.50 was quoted at \$4 last week.

The effect of the anthracite strike on bituminous in the Baltimore market is more noticeable in tonnage than in price. Both the Western Maryland and the Baltimore & Ohio are showing marked increases in coal revenues. Aside from prepared sizes, however, there has been no material change in quotations and high-grade coals can be had at low prices.

Good Coals in Demand at Birmingham

The Birmingham steam market for medium and lower grade coal is easy. High quality fuels are in more active demand. The large stocks accumulated during the first three weeks of December are still being drawn upon and this is having some effect on the spot market. The railroads are taking good tonnages.

The domestic market is in very good shape. Demand is good for all the better grade coals and fair for the medium and poorer qualities, sufficient business being booked or taken on from day to day to clear the output with little or no delay.

While the bulk of the sales are made on basis of quotations which have been in effect for several weeks, some little tonnage has been reported as moving from Walker County at slight reductions. Domestic quotations are stable and without change.

A strong coke market is reported with foundry grades \$6.50@7 per ton for spot business. Egg and nut are in good demand at \$5.50@6. Gas coke, with fair inquiry, is \$6.50@7 ovens.

Peace Rumors Stir Anthracite Market

Rumors of a resumption of anthracite wage negotiations stirred the anthracite trade at New York last week. Both dealers and consumers would welcome a return to peace as the existing situation is to the liking of neither group. The only anthracite still available is a small quantity of No. 1 buckwheat. A few cargoes of this size were quoted at \$16 alongside last week. Washery chestnut was offered at \$15, f.o.b. washery; No. 1 buckwheat, \$8; rice, \$6 and barley, \$3.

Coke has the edge on competing fuels in the race for the consumer's favor. Mine-run low volatile coal is a close second. The position of the latter is being improved steadily by the sky-rocketing prices asked by the coke ovens. Sized coke is held as high as \$12 and \$13 at the ovens, and even those quotations hold no definite promise of prompt delivery. In some cases retailers in Greater New York are asking \$22 from the consumer.

The Philadelphia trade in the past fortnight settled down to the belief that there would be no early resumption of anthracite mining. Many consumers, watching diminishing cellar stocks, have come to the same view and have rushed to their retail dealers for substitute fuels.

Coke bore the brunt of the charge and ovens asked up to \$12 and \$13 for their product—to the disgust of the retailers. Many of the latter declared that they would place no orders until prices declined. Turning to bituminous mine-run, the retail men have also been met with rising prices. Necessity, however, has compelled them to order freely.

At Baltimore the retail coal merchant continues to plug away on sales of soft coal and other substitute fuels. The householder is becoming more discriminating in his buying and the less desirable grades of bituminous are becoming a drug on the retail market. Briquets and coke are making new friends. Oil-heating systems, too, are finding a wider market. Fire and building department regulations, however, keep down the number because many of the cheaper burners cannot meet the requirements laid down by the municipal authorities.

Buffalo accepts the anthracite shortage as inevitable, but is bitter in its complaint against what it considers the avarice of the coke producers. Recent oven quotations have mounted as high as \$14 although coke may still be bought for curb delivery by the householder for \$9.50 from one company.

Sky-Rocketing Coke Prices Continue

Connellsville coke prices are still rising. The advance since last week is fully \$1 a ton, perhaps nearer \$2. The spot market has been entirely under control of the Eastern demand.

There has been practically no blast-furnace inquiry. The furnaces are, in general, covered by contracts for the quarter, made at what seem now to be very low prices. Since the first of the month two furnaces affiliated with coke ovens have banked to release the coke for the very profitable sale now possible, there being several times as much profit in coke as could be hoped for out of pig iron. Another has been considered likely to do the same at the end of this month.

Run of oven furnace coke is about \$8.50@\$9.50, with yard crushed at \$11@\$13 and broken coke, \$9@\$11.

The Courier reports coke production in the Connellsville and Lower Connellsville region in the week ended Jan. 16 at 112,100 tons by the furnace ovens—an increase of 1,300 tons—and 121,100 tons by the merchant ovens, an increase of 2,120 tons.

Car Loadings, Surplusages and Shortages

Week ended	Cars Loaded	
	All Cars	Coal Cars
Week ended Jan. 9, 1926.....	907,119	193,294
Preceding week.....	741,239	158,944
Week ended Jan. 10, 1925.....	932,807	217,412

Week Ended	Surplus Cars		Car Shortages	
	All Cars	Coal Cars	All Cars	Coal Cars
Jan. 7, 1926.....	310,155	115,502
Dec. 31, 1925.....	267,739	95,295
Jan. 7, 1925.....	280,921	129,846

Foreign Market And Export News

British Coal Market Outlook Brightening; Foreign Inquiries Up

The British coal market started the new year under the handicap of a tonnage shortage. Recent gales seriously delayed shipping, and collieries experienced difficulty in clearing supplies. With concessions for immediate shipping obtainable in almost all districts, buyers are covering only urgent requirements. A fairly good business, however, is in hand. There is a strong inland demand for both coal and coke, and further improvement is expected.

Late January inquiry from France is encouraging, but South American demand has moderated after the recent spurt. Shipments are fair to Italy, but new demand is slow to develop. There is good business offering for late January on the part of the coaling depots, particularly the Near East. Three cargoes are loading for the United States. A quieter tone pervades the Newcastle-Tyne market and little attempt is made to interfere with the prices which prevailed over December. The decision of the Durham miners' union to allow local settlements had a good effect on the outlook, for it paves the way to the adjustment of many disputes in the country, and the trade should benefit thereby. The steam coal section, while fairly active, was not as steady as the gas and coking coals, the latter having improved in demand since the iron and steel trade picked up. For the same reason coke of all grades showed a better tone when the year opened.

Production by British mines during the week ended Jan. 9, according to a special cable to *Coal Age*, totaled 5,060,000 gross tons, compared with a total output of 4,050,000 tons in the preceding week.

Belgian Steam Coals Still Dull

Many Belgian collieries, particularly those producing industrial coal, have recorded a loss over the year, or such a trifling profit that it is not worth while to mention it. This probably will lead to some concentration schemes among collieries in the Hainaut.

The domestic market is still very lively, with dealers complaining of insufficient tonnages. As the weather is

much milder, however, no doubt demand will soon moderate.

The prospects of a general strike of the men are definitely set aside. The general feeling is that the men will accept a curtailment in their wages of 3 fr. per day, and the continuation of the pourparlers engaged with a view to conclude a new wage convention.

Strong Demand for Domestic Taxes French Market

The French coal market begins the new year auspiciously. Demand for industrial coal is strong enough to take care of output. Domestic coal factors are complaining that French and Belgian shippers are behind on deliveries and that the retail trade has been compelled to turn to higher-priced British coals. Welsh anthracite nuts were quoted at 410@450 fr. at Rouen last week. Transportation difficulties—both rail and water—have held back the French and Belgian collieries. The floods have almost shut off internal water movement.

The new prices on Nord and Pas de Calais coals had not been published when this report was written (Jan. 7), but it was rumored that there would be an increase of 4 to 5 fr. on industrial and domestic coals and possibly 15 fr. on patent fuel. Sharp increases in the price of binder material are held responsible for the greater advance in patent fuel prices. Flaming coals from Marles and Bruay are up 5 fr. The increase in French prices is due to the fresh taxes imposed upon collieries. If the miners' request for higher wages be granted, another boost will follow.

Belgian coals for French delivery show an increase of 3 to 5 fr. because of the difference in the rates of exchange. A comparison of base prices last October with quotations effective Jan. 1, 1926, show advances of 8.75@47.35 fr. due to changes in exchange rates.

In addition to adverse exchange rates, French buyers also are hit by increases in rail transport rates which went into effect the first of the year. Rates from the Pas de Calais field to Paris are up 4 fr., and from Jeumont, on the Belgian frontier, 4.35 fr. Rates for the Belgian haul have increased about 2 fr. Belgian, boosting the cost in French francs from 5 to 7 fr.

It is reported that an agreement on free German coals will be negotiated this month. The first of the year prices on domestic coal were advanced as follows: Sized anthracite, 40 fr.; lean, 5 fr.; semi-bituminous, 5 fr.; lignite briquets, 5 fr.

During December, 1925, the O. R. C. A. received 258,358 tons of coke from the Ruhr.

France produced 4,078,710 metric tons of coal and lignite, 270,342 metric tons of coke and 321,958 metric tons of patent fuel in November, 1925.

U. S. Fuel Exports in December

	1924	1925
Anthracite, gross tons.....	320,845	7,122
Value.....	\$3,662,129	65,365
Bituminous coal, gross tons.....	1,090,486	1,394,693
Value.....	\$5,129,688	\$6,063,554
Coke, gross tons.....	56,307	131,351
Value.....	\$474,364	\$1,190,033

TWELVE MONTHS ENDED DECEMBER

	1924	1925
Anthracite, gross tons.....	3,587,308	2,838,398
Value.....	\$40,067,804	\$31,760,627
Bituminous coal, gross tons.....	15,268,167	15,590,627
Value.....	\$70,971,302	\$68,402,553
Coke, gross tons.....	588,705	851,618
Value.....	\$4,926,478	\$6,871,962

Export Clearances, Week Ended Jan. 23, 1926

FROM HAMPTON ROADS

	Tons
For Italy:	
Ital. Str. Giovanni, for Genoa.....	10,397
Ital. Str. Pollenzo, for Portovenchie.....	9,326
Ital. Str. Vallemore, for Bagnoli.....	7,423
For Canal Zone:	
Amer. Str. Marore, for Balboa.....	8,619
Amer. Str. Lebon, for Cristobal.....	10,473
For Cuba:	
Amer. Str. Santore, for Dauquiri.....	10,791
Br. Str. Invella, for Callao.....	5,017

Hampton Roads Coal Dumpings*

(In Gross Tons)

	Jan. 14	Jan. 21
N. & W. Piers, Lamberts Pt.:		
Tons dumped for week.....	162,647	163,256
Virginia Piers, Sewalls Pt.:		
Tons dumped for week.....	83,512	94,822
C. & O. Piers, Newport News:		
Tons dumped for week.....	140,948	105,873

*Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS

	Jan. 16	Jan. 23†
Pool 1, New York....	\$6.00@ \$6.35	\$6.00@ \$6.35
Pool 9, New York....	5.50@ 5.75	5.50@ 5.75
Pool 10, New York....	5.25@ 5.50	5.25@ 5.50
Pool 11, New York....	4.85@ 5.25	4.85@ 5.25
Pool 9, Philadelphia..	5.25@ 5.50	5.00@ 5.40
Pool 10, Philadelphia..	5.00@ 5.30	5.05@ 5.25
Pool 11, Philadelphia..	4.70@ 4.95	4.80@ 5.00
Pool 1, Hamp. Roads.	4.65@ 4.75	4.65@ 4.75
Pool 2, Hamp. Roads.	4.15@ 4.25	4.20@ 4.30
Pool 5-6-7, Hamp. Rds.	4.00@ 4.10	4.00@ 4.15

BUNKERS

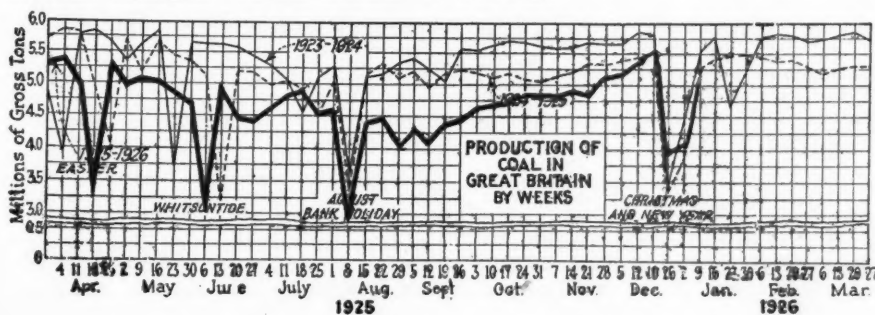
Pool 1, New York....	\$6.25@ \$6.60	\$6.25@ \$6.60
Pool 9, New York....	5.75@ 6.00	5.75@ 6.00
Pool 10, New York....	5.50@ 5.75	5.50@ 5.75
Pool 11, New York....	5.10@ 5.50	5.10@ 5.50
Pool 9, Philadelphia..	5.50@ 5.75	5.55@ 5.70
Pool 10, Philadelphia..	5.30@ 5.55	5.25@ 5.60
Pool 11, Philadelphia..	4.90@ 5.15	5.10@ 5.25
Pool 1, Hamp. Roads.	4.75	4.75
Pool 2, Hamp. Roads.	4.25	4.30
Pools 5-6-7, Hamp. Rds.	4.10	4.15

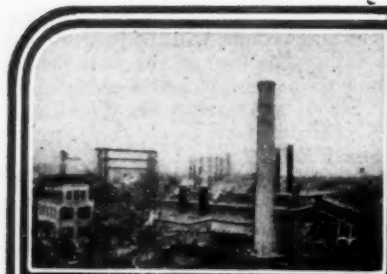
Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to Coal Age

	Jan. 16	Jan. 23†
Cardiff:		
Admiralty, large..	22s.6d. @ 23s.	22s.9d. @ 23s.3d.
Steam smalls.....	14s.	14s.
Newcastle:		
Best steams.....	15s.9d.	16s.9d. @ 18s.
Best gas.....	16s.6d.	16s. @ 18s.
Best bunkers.....	15s.6d. @ 16s.6d.	16s.6d.

†Advances over previous week shown in heavy type; declines in italics.





News Items From Field and Trade



ALABAMA

At a recent meeting of the Birmingham chapter of the Joseph A. Holmes Safety Association, at Powhatan Mine, of the Franklin Coal Co., officials of the company stated that since the operation was started in 1919 1,250,000 tons of coal had been mined without a fatal accident in the ranks of the 250 to 300 men in the service. J. Frank Rushton is president of the company; T. R. Jordan, vice-president and general manager; L. T. Daniel, secretary-treasurer and sales manager, and J. H. Tidmore, local superintendent. The general offices of the company are in Birmingham.

ARKANSAS

Mine employees of the Clark-McWilliams coal mine in the Spadra field who had been on a strike since early in December, have returned to work, according to word received from mine authorities there. The controversy was brought about when the workmen demanded a change in working hours. The miners returned to work on their own accord it was said, no agreement having been reached previously by the men and the operators.

COLORADO

The state coal mine inspector's report for Colorado for December shows an increase of 39,000 tons in output over the same month a year ago. Total production in 1925 was approximately 9,402,000 tons, a decrease of 110,000 tons compared with 1924.

ILLINOIS

James F. McDonnell, of Bloomington, has been named receiver for the St. Louis Coke & Iron Co. to succeed the late James Duncan, of Alton. The appointment was made by Federal Judge Louis Fitzhenry. Under Mr. Duncan's administration the properties of the company were sold to the Midland Coke & Iron Co., which was organized by financial groups interested in the affairs of the St. Louis Coke & Iron Co. The new company has made extensive improvements at the plant.

INDIANA

The engine room of the Bruceville coal mine, near Bicknell, a unit of the Knox Consolidated Coal Co., which operates five mines in that vicinity, was damaged by fire to the extent of \$20,000 the night of Jan. 13. Officials of the company believe the fire was of incen-

diary origin. The mine has been idle for several years, since it was consolidated with the Knox company, with headquarters at Indianapolis.

Somerville Mine No. 1, near Princeton, resumed work Jan. 18 following completion of construction work on a new tippie. The old structure was destroyed by fire several weeks ago. With the reopening of the Somerville mine all pits in Gibson county with the exception of the Bosse Coal Co. mine near Buckskin are at work. Labor trouble is keeping that pit closed.

Fire of unknown origin on Jan. 11 destroyed the surface buildings of American Mine No. 1, near Bicknell. More than 1,000 men were thrown out of work. This blaze, discovered as the day shift reported for work, comes on the heels of two others. The operators see an effort of the union men to intimidate mine owners, while the union believes the property was burned to reflect upon the union. Investigation by the State Fire Marshal's office is to be asked by District 11, United Mine Workers.

KANSAS

Thirty-three applicants for certificates of efficiency took examinations in Pittsburg, Jan. 16. This was the largest class to seek such certificates in mining since the passage in 1917 of the law requiring them for certain positions. Of the thirty-three, six took the examination for gas men, eight for mine foremen, three for electrical engineers, twelve for shotfirers and four for hoisting engineers.

KENTUCKY

G. W. Hay, of McRoberts, general manager of the Elkhorn Division of the Consolidation Coal Co., has been named general manager of operations of the concern, according to an announcement made by Frank R. Lyon, vice-president. At the same time, H. S. Carpenter, general superintendent of the Elkhorn Division, was named general manager of that division. The changes will be effective Feb. 1. Mr. Hay formerly was a mining engineer in the anthracite field but has been employed by the Consolidation Coal Co. since June, 1917. At different times Mr. Hay was superintendent of the Consolidation mines at Dunham and McRoberts.

MARYLAND

C. W. Van Horn has been promoted from general superintendent of the Maryland division of the Baltimore &

Ohio R.R. to general superintendent of transportation, with offices in Baltimore. Mr. Van Horn, who has been connected with the company 24 years, formerly was located in Fairmont, Grafton and Cumberland, Md., and is known to hundreds of coal operators.

MASSACHUSETTS

Massachusetts retail coal dealers reported stocks of 118,000 net tons of anthracite in their yards Jan. 1, compared with 178,000 tons on Dec. 1. Cumulative deliveries of hard coal by dealers since April 1, last, total 3,672,558 tons, which compares with deliveries during the entire preceding coal year of 5,115,717 tons. Eugene C. Hultman, Massachusetts Fuel Administrator, reports that during December the coal dealers of Massachusetts delivered to householders 309,434 tons of soft coal, an increase of 90,000 tons over the amount delivered in November. On Jan. 1 the dealers had a total of 326,433 tons of bituminous coal in their yards.

NEW YORK

James P. Geagen, William J. Dalton and Benjamin Wertheim have been elected additional vice-presidents of Burns Brothers, New York City. Mr. Geagen has been assistant general manager for fourteen years. Mr. Dalton formerly was vice-president of the Wyoming Valley Coal Co. and Mr. Wertheim is a brother of the president.

OHIO

The Webb mine of the Cambria Collieries Co., south of Bellaire, where on Dec. 22 nine lives were snuffed out by fumes and smoke from a fire starting in a section off the main entry, resumed operations in full Jan. 11 with practically the entire force of 600 men at work. The mine had been idle since the accident but a force of men had been at work cleaning up the debris left by the fire and getting the workings in shape. The mine has been carefully inspected by state mine officials since the fire as well as by experts in the employ of the company and they state that the workings are as safe as it is humanly possible to make them and with plenty of orders ahead a long period of work is expected.

A number of leaders of the United Mine Workers were arrested last week in the Pomeroy Bend field and it is hoped in that manner to clear up a number of cases of sabotage which have occurred in the district. Maurice

Thornton, a union leader and head of the miner's relief organization, was arrested charged with being implicated in the burning of the tippie of the Blackstone Mine at Rutland, Aug. 8. David Fowler, another union miner, was arrested in connection with the burning of the same tippie. Osby Martin was charged with driving an automobile in a raid on a powder house at the Simpson Coal Co. The arrests followed confessions of Warren Falia and Clyde Tyree, mine workers, made in connection with the powder raid.

Mine No. 1 of the Short Creek Coal Co., Duncanwood, has resumed operations after suspension since last April.

A gas explosion, followed by a fire, last week, caused a loss of about \$12,000 in the mine equipment of the Green & Schultz Coal Co., at Sand Run, near Logan. Repairs will be made at once.

PENNSYLVANIA

The Engineers' Society of North-eastern Pennsylvania held its annual meeting at Wilkes-Barre Jan. 21, when officers were elected for the ensuing year. The new men, who were installed at the banquet at the close of the meeting, are as follows: President, C. R. Seem, electrical engineer, Glen Alden Coal Co.; First Vice-President, R. H. Buchanan, president, South Penn Collieries Co.; Second Vice-President, L. H. Vail, assistant electrical engineer, D. L. & W. R.R.; Secretary, B. E. Shaffer, electrical engineering department, Hudson Coal Co.; Treasurer, W. G. Metzgar, manager safety division, Hudson Coal Co.; Directors, E. A. Lewis, general superintendent, Scranton Electric Co.; Myron S. Knight, mining engineer; P. J. Murphy, vice-president and general manager, Laurel Line.

The Pittsburgh Coal Co. in the week ended Jan. 16 produced a new record weekly tonnage in the Western Pennsylvania mines since it started operating on the 1917 scale, when 28,907 tons were turned out. On Jan. 21 the company announced that it had 1,522 men at work. On the same day a new maximum daily production of 5,809 tons from the seven mines was reported.

The Standard mine of the H. C. Frick Coke Co., at Mt. Pleasant, had an unusual record in December. With more than 700 men at work on 25 days in the month, there was not an accident. In December, 1924, there were 10 accidents in which time was lost.

UTAH

Application of the Utah Railway Co. to purchase the 8.9 miles of railroad built into Gorley and Gordon Creek canyons by the National Railway Co. has been approved by the Utah Public Utilities Commission. A request for permission to take over the line also has been filed with the Interstate Commerce Commission. The Utah company proposes to acquire the line as a branch to the 25.78 miles of railroad now operated and owned by it between Mohrland

and the Utah Railway Junction connecting with the D. & R. G. W. The consideration involved is approximately \$550,000. The branch line of track was built into the Gordon Creek district to open up some new coal fields owned in that region by the Great Western Coal Mines Co., the Sweet Coal Co. and the Union Coal Co.

VIRGINIA

The Virginia Iron, Coal & Coke Co. reports gross earnings of \$1,009,713 for the quarter ended Dec. 31, and net income of \$9,752 after all charges. In the September quarter the gross was \$865,709 and the net \$61,997. Based upon the quarterly statements, gross earnings for 1925 aggregated \$3,386,308 against \$3,602,442 in 1924. Net profit, subject to inventory adjustment, amounted to \$218,791 last year, against a loss of \$53,503 in 1924. The net profit for 1925, after allowing for preferred dividend requirements equaled 93c. a common share.

The Clinchfield Coal Corp. for the quarter ended Dec. 31, 1925, reports net income of \$147,698 after all expenses and charges. After allowing for preferred dividends this was equal to 77c. a share on the 145,476 shares of common stock. After payment of both common and preferred dividends the company reported a surplus of \$40,591 for the quarter.

WEST VIRGINIA

Robert Lilly, district mine inspector, was unanimously re-elected president of the Fayette County Mining Institute at a meeting held at Mt. Hope, W. Va., Jan. 9. Also re-elected were William Ward, first vice-president; John Whitehead, second vice-president; Hobart E. Gillespie, third vice-president. E. S. Criwell was elected secretary-treasurer to succeed Mose McSpadden. Thomas Allen, a mining engineer from Colorado, delivered a most interesting address on how extreme weather conditions affect mining in Colorado. A feature of the meeting was the exhibition of two interesting moving pictures, entitled "Dynamite at Work" and "Let Dynamite Do It," which disclosed the difficult tasks which could be performed by the proper use of explosives.

The Fairmont coal sales office of the Consolidation Coal Co. opened Jan. 16 in the Watson Building.

A mine fire occurred in the mine of the Buffalo Creek Coal Co. at Accoville, in the Logan field, last week, according to Robert N. Lambie, of Charleston, chief of the West Virginia Department of Mines. From last reports the fire was under control.

New Coal companies organized in West Virginia during December had an aggregate capital stock of \$770,000, although two of the seven companies organized have stock of no par value. The new organizations include the Copen Creek Coal Mines, Inc., of Gassaway, with a capital stock of \$10,000; Clarksburg Coal Co., of Clarksburg,

\$50,000; Henry Coal Co., of Nolan, \$10,000; Bur-Mar Collieries Co., of Huntington, with chief plants in Kentucky, \$200,000; Sturgeon Creek Coal Co., of Charleston, with chief plants in Kentucky, 1,000 shares of no par value; Crown Coal Co., of Johnstown, Pa., \$500,000; Octavia J. Coal Mining Co., of Cincinnati, Ohio, 3,000 shares of no par value.

The offices of the Richland Coal Co. near the Richland mine, at Warwood, were completely destroyed recently by a fire of unknown origin. Loss in office equipment was estimated at about \$5,000, but valuable records of the company also were destroyed.

The West Virginia State Department of Mines has inaugurated a safety program which was started Jan. 15, according to Robert M. Lambie, of Charleston, chief of the department. It is planned to hold meetings at different mines in the Fairmont region every Wednesday. State mining inspectors and men in charge of rescue stations met in Charleston on Jan. 1 and 2 to discuss routine matters, chiefly the subject of safety, and plan for the safety drive.

O. J. Keys, superintendent of the Pittsburgh-West Virginia Coal Co., announces that a mine tippie, at Cross Creek, Brooke County, replacing the one recently destroyed by fire was placed in operation Jan. 5. A warehouse of the company was destroyed Jan. 4 by an explosion.

The Yukon Coal Co. has ceased to exist as a corporation, having surrendered its charter to the state, and the George Whyel Coal Co. has surrendered its charter.

Abner Lunsford, in charge of the coal mines of the Ford interests, stated in Huntington last week that his company has no further purchases of coal property in mind, as present production just about sufficed to meet the requirements of the Ford factories. He stated that it required the use of between 1,500,000 and 2,000,000 tons of coal annually to operate the Ford plants.

According to reports, the work of rock-dusting Federal mine No. 1 of the New England Fuel & Transportation Co., at Grant Town, has been completed and work will be started soon on Federal mine No. 3, at Everettville, Monongalia County.

The Brady-Warner Coal Corporation is installing screens at the Osage mine, in Scott's Run, in order to prepare 3- and 4-in. lump.

WYOMING

The Union Pacific Coal Co., the largest mine operator in Wyoming, has bulletined notice that any employee hereafter detected carrying matches into its mines will be summarily discharged, and a charge against him will be lodged with the chief state mine inspector. The mines of the company in Wyoming now are being operated on a 100 per cent safety-lamp basis. Since the passage of the new mine safety code last Feb-

ruary, the corporation has been conducting an educational campaign among its employees.

CANADA

Unemployment has reached an acute stage at Sydney, N. S., where the Princess Colliery was closed down indefinitely on Jan. 11 and the working time of the Florence Colliery was reduced to six days per month. About 2,000 men are employed in the two mines. J. E. McLurg, vice-president of the British Empire Steel Corp., states that this is due to lack of demand for coal and that the situation is beyond the company's power to help or hinder. The Board of Trade and the Town Council have appealed to the Provincial government for assistance.

A serious situation prevails in the Alberta coal industry, seventeen mines in the Wayne and Drumheller fields alone having been practically closed owing to the mild winter in the West and consequent scarcity of orders.

Traffic

I. C. C. Examiner Advises on Southeastern Rates

Examiner William B. Hunter, of the Interstate Commerce Commission, has made a proposed report in Docket 13823, Virginia Coal Operators Association vs. Aberdeen & Rockfish Railroad Co., et al., in which he recommends that the Commission should find that rates on coal from the Appalachia and Dante districts in Virginia to points in North Carolina, South Carolina and Georgia, and rates from the Harlan County district in Kentucky to the same destinations are not unduly prejudicial.

The examiner further recommends that the Commission should find that the rates to Jacksonville, Fla., and points in Florida basing on Jacksonville are, and for the future will be unduly prejudicial to the complainants to the extent that the rate from Appalachia and Dante districts to Jacksonville exceeds the rate from the Harlan County District Group 4 to Jacksonville. The proceedings in this case were reopened for further hearing for the purpose of developing the facts with respect to the lease of the Carolina, Clinchfield & Ohio R.R. by the Louisville & Nashville and the Atlantic Coast Line and the effect thereof upon the rate situation complained of. It is the examiner's opinion that in light of the changed conditions the Commission should adopt the recommendations made above.

Would Unify Coke Rates to Ohio

The Coal, Coke & Iron Ore Committee, Central Freight Association Territory, announces a hearing at Room 606 Chamber of Commerce Building, Pittsburgh, Pa., Feb. 4, at 10 a.m., on a proposed advance to \$3.40 per ton in the rate on coke, coke breeze, coke dust and coke screenings from Boomer, Canelton, Carbondale, Dickenson, Gauley Bridge, Harewood, Longacre and Marting, W. Va., to stations on the Toledo & Ohio Central R. R., between Toledo

and Renner, Ohio, inclusive, and Moline and Granville, Ohio, inclusive. The proposed increase is intended to place the rates on a parity with those carried from the same district by competing lines.

Dismisses Complaint on Rates To Indiana-Michigan Points

The Interstate Commerce Commission has dismissed complaint in Docket 15698, Kalamazoo Chamber of Commerce et al. vs. Chesapeake & Ohio Ry. et al. This complaint also included sub No. 1, Grand Rapids Association of Commerce vs. C. & O. The complaint challenged the lawfulness under Sec. 1 and 3 of the Act, of the rates on bituminous coal from mining districts in Ohio and from the Inner and Outer Crescent regions to Elkhart, Ind.; Grand Rapids and Kalamazoo, Mich., and several other Michigan points in the same general vicinity. The Commission finds that the rates assailed are not shown to be unreasonable and further states that it is not convinced that the spreads between the various assailed and compared rates heretofore fixed by the Commission in the light of all the surrounding circumstances, and which are still maintained, are sufficiently out of line to warrant a finding of undue prejudice, and, therefore, the complaint is dismissed.

Central Cuts N. Y. Coke Rates

The New York Public Service Commission has approved reduced rates of the New York Central (East) on coke, coke breeze and coke dust, from Buffalo, East Buffalo and Harriet to the following West Shore stations: Syracuse, Amhoy, Warners, North Memphis, Jordan, Weedsport, Port Byron and Montezuma, \$2.02; Savannah, South Clyde, Lyons and Newark, \$1.76; Port Gibson, South Palmyra, Macedon, Wayneport, Fairport and Ridgeland, \$1.51; Mortimer, \$1.39; effective Feb. 21, 1926.—Supplement No. 4 to P. S. C. N. Y. C. No. C-154.

Rate Cut on Wabash to Hannibal

The Wabash R.R. has cut the freight rate from the Springfield district to Hannibal, Mo., 10c. per ton on steam coal, effective Feb. 11. About 50 per cent of the coal used in Hannibal and vicinity comes from the Springfield district. The reduction is the result of a complaint filed some time ago by the Hannibal Shippers' Association.

The Wabash also has been instrumental in effecting a reduction of 45c. per ton in the rate on coal from eastern Kentucky to Hannibal.

Association Activities

The West Kentucky Coal Bureau, traffic organization of the western Kentucky operators, held its annual meeting in Louisville Jan. 19, after a postponement of a week on account of the death of Fred P. Wright, Crescent Coal Co., of Bevier, vice-president of the organization. Resolutions were adopted by the association in connection with Mr. Wright's death. James D. Overall, of the Reinecke Coal Mining Co., Madisonville, was elected president; A. W. Duncan, of W. G. Duncan Coal Co., Greenville, vice-president, and C. E. Reed was re-elected secretary-treasurer and manager. Percy D. Berry, Providence Coal

Mining Co., Providence, retiring president, was elected chairman of the Executive Committee, and W. A. Wickliffe, of the Wickliffe Coal Mining Co. and Greenville Coal Co., Greenville, along with K. U. Meguire, of the Dawson Daylight Mining Co., Dawson Springs, were named to fill vacancies on the committee. C. R. Hawley, of the Hawley-McIsaac Co., Madisonville; G. S. Miles, of the Gibraltar Coal Mining Co., Memphis; M. B. Lanier, of the Norton Coal Mining Co., Birmingham, and C. R. Richardson, of the West Kentucky Coal Co., Sturgis, were re-elected to the committee.

The Hazard Coal Operators' Exchange met at Lexington, Ky., Jan. 22, when the following directors were elected: James Bonnyman, S. R. Jennings, George P. Fitz, Hugh Buford, Dan Pritchard, C. Reginald Riley, W. M. Miller, Calvin Holmes, W. S. Dudley, A. L. Allais, Prentiss H. Burlingham, T. J. Cassidy, John P. Gorman, T. Ward Havelly, John H. Jones, J. H. Bowling, Carl Robinson and Henry Pfening. These officers were elected: W. J. Brown, Jr., president; Henry Pfening, vice-president; James Bonnyman, chairman executive committee; Irvin Davis, secretary executive committee; J. E. Johnson, secretary, and H. E. Bullock, treasurer.

Better selling methods to popularize high-volatile coal in New England and elsewhere were discussed at the quarterly meeting of the Kanawha Coal Operators' Association, in Charleston, W. Va., last week. Despite propaganda against the use of high volatile, reports from many sections of New England indicated that it was being favorably received and that there was strong probability of its being able to retain its markets after the anthracite strike was settled. While no definite action was taken on shipping on consignment, many operators stated that the practice had done much to unsettle market conditions and was not fair to regular buyers of coal.

Obituary

S. Thurston Ballard, 71, president of the Liberty Coal & Coke Co., Louisville, with mines in the Pineville (Ky.) district; also president of the Ballard & Ballard Co., largest winter wheat millers in the South; vice-president of the Louisville National Bank, U. S. Trust Co., and other concerns, died Jan. 19 at his home in Louisville, following a year's illness. Mr. Ballard was one of Louisville's leading business men. Years ago he adopted a profit-sharing policy with all his mill workers, the plan being so successful that he was called on and worked with the government for some years in the Industrial Relations division. From 1920 to 1924 he was Lieutenant-Governor of Kentucky. The Kentucky Legislature, in session at the time of his death, adjourned after adopting resolutions mourning his passing.

Samuel O'Neil, aged 83, pioneer coal operator in the Monongahela Valley, and organizer of the O'Neil Coal & Coke Co., of Clarksburg, W. Va., died Jan. 18 at Pittsburgh, Pa. He had retired from active business several years ago. For many years he was connected with the Fayette City Coal Co., which in 1898 was merged with a number of smaller companies into the Consolidated Coal & Coke Co. The same year he went to Clarksburg and organized the O'Neil Coal & Coke Co., which in 1903 was sold to a larger concern. After the sale of his West Virginia company he went to Pittsburgh and had resided there since.

Philip S. Emmons, 60 years old, wealthy coal operator, of Scottsdale, Pa., was crushed to death Jan. 13 beneath his automobile, which skidded and overturned in the Connellsville-Scottsdale highway, at Pennsville, near Connellsville.

Joseph Byron Echard, 66, widely known throughout the Western Pennsylvania coal and coke region, died at Connellsville, Pa., January 14. Pneumonia was the cause. Born at Pennsville, he spent his boyhood days on a farm there and attended school in that district. When a young man he went to Connellsville and for a time was employed as a fireman on the Baltimore & Ohio R.R. Later he engaged in the coal business, purchasing that beneath the Murphy and Stickel farms at Star Junction. He built 60 ovens at what is still known as Echard, near Star Junction, and formed the Echard Coal & Coke Co. When that coal was worked out he became identified with the Etna-Connellsville Coal & Coke Co. He was president and manager of that company for a time and at the time of his death was manager and vice-president.

Coming Meetings

American Institute of Electrical Engineers. Annual convention, Feb. 8-12, 1926, at Engineering Societies Bldg., New York City. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

Pittsburgh Vein Operators' Association. Annual meeting, Feb. 15, Cleveland, Ohio. Secretary, D. F. Hurd, Marion Bldg., Cleveland, Ohio.

American Institute of Mining and Metallurgical Engineers. Annual meeting, Feb. 15-17, 1926, at Engineering Societies' Building, New York City. Secretary, Dr. H. Foster Bain, 29 West 39th St., New York.

The Rocky Mountain Mining Institute. Winter meeting, Feb. 23-25, 1926, at Albany Hotel, Denver, Colo. Secretary, Benedict Shubart, Boston Building, Denver, Colo.

Canadian Institute of Mining and Metallurgy. Twenty-eighth annual and general meeting, March 3-5, at the Windsor Hotel, Montreal, Quebec, Canada. Secretary, G. C. Mackenzie, 603 Drummond Bldg., Montreal, Que., Canada.

New England Coal Dealers' Association. Annual meeting at the State Armory, Worcester, Mass., April 7 and 8. Secretary, E. I. Clark, 141 Milk St., Boston, Mass.

Industrial Notes

Clarence R. Claghorn, credited with having originated the idea of using conveyors in coal mines, has been appointed sales representative of the **Conveyor Sales Corp.**, of New York, to handle the Eickhoff conveyor in the states of West Virginia, Virginia and Maryland. Mr. Claghorn has an office at 715 Continental Building, Baltimore, Md. The Vulcan Iron Works of Denver, Colo., has the Rocky Mountain district sales rights on the Eickhoff.

The **Okonite Co.** and the **Okonite Cables Co., Inc.**, have opened an office in the Hoge Building, Second Avenue and Cherry Street, Seattle, Wash. This new office, in connection with the branches already established at San Francisco and Los Angeles, places Okonite products and service within the immediate reach of buyers all along the Pacific Coast.

A. S. Urquhart, representative of **Madeira, Hill & Co.**, in eastern New England, with headquarters at Boston, having resigned, the following changes will be made in the company's district representatives: **E. C. Hitchcock**, from New Haven to Boston; **G. M. Stauffer**, from Elizabeth to New Haven; **John Jacobson**, from New York to Elizabeth, N. J.

The **Timken Roller Bearing Co.**, Canton, Ohio, announces the appointment of Ernest Wooler as chief engineer, in full charge of all automotive, industrial, experimental and service engineering.

The **Penn Electric Co.**, of Scranton, agent jobbers for the Westinghouse Electric & Mfg. Co., has been awarded a contract for electrification of the Buck Mountain Coal Mining Co.'s new operation at Gowen, near Hazleton. The contract covers substation, compressor and locomotive haulage.

The **Terry Steam Turbine Co.**, Hartford, Conn., has appointed **John M. Rittelmeyer**, 332 Healey Building, Atlanta, Ga., as sales representative in the territory in the vicinity of Atlanta.

Publications Received

Annual Report of the Department of Mines of West Virginia for the Fiscal Year Ending June 30, 1924. Sections I and II. Pp. 392; 6 x 9 in.; tables.

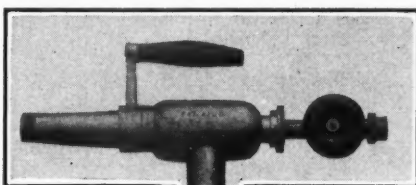
Practical Coal Production, by Frank H. Kneeland. McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York City. Price, \$3. Pp. 419; 5½ x 8 in.; illustrated. Describes the preliminaries of coal mining, including prospecting, explosives, development, drainage and ventilation.

Fuels and Their Combustion, by Robert T. Haslam and Robert P. Russell. McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York City. Price, \$7.50. Pp. 809; 6 x 9 in.; illustrated. This book is a comprehensive treatise on the economic utilization of fuels.

New Equipment

Pneumatic Gun Projects Refractory Cement

In the field of refractories two new products have recently been placed on the market by the Carborundum Co., of Niagara Falls, N. Y. One of these is a cement for lining or repairing furnace walls, and the other a gun for



Air Gun Shoots Cement

its application. Carborundum, one of the most highly refractory substances known, forms the chief ingredient of the new cement which is known as "Carbolastic." Through the proper selection of bonding material this cement is made to inherit the heat-resisting properties of carborundum. At the same time it lends itself readily to application by means of the gun which is shown in the accompanying illustration. Preparation of the cement consists of merely adding water until the material attains the proper consistency. Upon application it soon sets in the air with a strong bond and is highly resistant to even intense heat.

Minimizing the effects of flame impingement on brickwork, filling up cavities that are the result of spalling or of the destructive barring off of clinker formations or which arise from other destructive agencies employed in furnace operation, maintenance or repair, are the chief uses of this new cement. Its application as a coating over a firebrick furnace wall or its use as a plastic refractory in patching, the makers claim, will prolong the life of firebrick settings while at the same time the necessity for frequent shut-downs for repairs is eliminated. It can be applied to either hot or cold settings.

The gun is an extremely handy little device for applying this cement. It weighs only 12 lb. and has no moving parts to get out of order. It is controlled by a single valve placed near the handle. It may be operated on

either steam or air at 100-lb. pressure and will shoot the cement at the rate of over 100 lb. per minute. The principle of the ordinary injector is utilized in its construction and it sucks the cement from a pail or bucket, no auxiliary hopper being necessary.

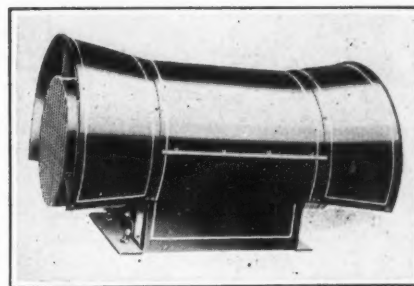
Adjustable Horn Siren Is an Efficient Noise Maker

Sirens have been used as a substitute for bells or steam whistles at electrically operated mines for many years. By and large, these machines have given excellent satisfaction. In several respects, however, they have been much improved in detail. Thus the double-head type B siren as now built by the Federal Electric Co., 8700 S. State St., Chicago, Ill., has several new features.

In the latest model a 5-hp. motor operating at 3,000 to 3,500 r.p.m. is used. The fans or rotors that generate the sound are of 15-in. diameter. A bent steel plate is used as a motor footing or base which lightens the machine and makes it easier to erect than the older machine with its cast-iron base. The hood also has been improved until it now resembles that of an automobile, being hinged at the back and provided with wing nuts in front so that when it is raised the motor is entirely accessible and open to view.

Probably the greatest improvement in this device, however, and one that has been patented is the double horn effect over the slot openings. By means of this double horn the incoming stream of air is separated from the outgoing stream, the friction of the two currents being thus reduced to a minimum. This materially increases the efficiency of the machine as well as the effectiveness of the sound emitted.

In this arrangement also the outer horn is adjustable, that is, it may be rotated so that a directional effect upon the sound can be obtained. This feature, which also has been patented, is an especially important consideration at mines because in many cases the village layout and local topography are such that it is necessary to project sound in only one direction.



Improved Adjustable Siren

This compact unit is lighter than its predecessors. It is fully housed yet the housings may be readily lifted, giving access to the motor. The double horns may be adjusted so as to project the sound in the direction desired.

New Scale Weighs Big Trucks Used for Local Track

At many coal operations local trade absorbs a large part of the mine output. In these days of good roads and motor haulage much of this local fuel is delivered by motor truck. It therefore becomes necessary for the mine to provide a scale of sufficient size to accommodate and weigh these machines.

To meet this need the Fairbanks-Morse Co. has produced the scale shown in the accompanying illustration,

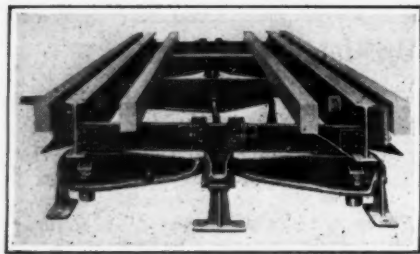


Fig. 1—Platform Foundation and Balance Beams

This scale is designed for quick, accurate work. The platform is 10 ft. wide and 28 ft. long or big enough to accommodate even the largest of motor trucks. The scale beam proper may assume any one of several shapes to suit the needs of the user.

several of which have been placed in operation during the past year or so. This is a scale of 30 tons capacity having a platform 10 ft. wide and 28 ft. long. It may be furnished with a variety of beams. Thus it may be equipped with a plain full-capacity beam with a tare bar of sufficient size to accommodate the largest of trucks, or it may be furnished with a full-capacity type registering beam. This latter type of beam records the weight in type on a ticket. If business is



Fig. 2—Indicating Dial for Quick Weighing

This scale may be fitted with a variety of beams. The one here shown, consisting of an indicating dial, is particularly useful if rapid weighing must be done. All of the ordinary types of weighing beams may also be had to suit the customers' needs.

"rushing" or where trucks follow each other in quick succession the scale may be fitted with a full-capacity direct-reading dial that will indicate the weight up to the limits for which the scale is built. Such a dial is shown in Fig. 2.

New Valve Built to Withstand High Pressures and Heats

After much experimentation the Hydraulic Press Mfg. Co. has evolved a new forged steel valve intended for high pressures and superheats. This is known as the Forsteel valve and is of straight-way or gate type. The metal body is of uniform thickness throughout, thus equalizing expansional and contractional stresses, as well as providing a full opening for the steam flow, which reduces friction to a minimum.

In this valve the seat, disk and stem are all of non-corroding, acid-resisting metal, either steel or monel. Because of the construction, wire drawing is eliminated and the valve remains tight when cold even though it was closed while hot. Ample packing space is provided and the valve may be repacked in five minutes without in anywise interfering with operating conditions. The packing nut is made of monel metal, the yoke of steel and the stem is extra large.

This valve, which was designed especially for high temperature and high pressure work, is built to withstand extremely severe operating conditions. It is the product of over fifty years of experience in this kind of work.

Master Switch Is Protected Against Moisture and Fumes

For those places where it is desirable to protect electrical apparatus against moisture and acid fumes, the Cutler-Hammer Mfg. Co., Milwaukee, Wis., has introduced the control station shown in the accompanying illustration. The mechanism is inclosed in a cast-iron case, and has a cover fitted with a gasket, which excludes all moisture and fumes. A stuffing gland fitted to the shaft provides a tight fit, and the thick wall of the cast-iron body allows enough threads for a tight conduit or pipe connection.

Contact is made on the brass cylinder

by two heavy fingers of standard non-stubbing design. These fingers are mounted on asbestos lumber and are zinc-plated as are all other small parts. The contact tips are of heavy rolled copper. The fingers are of sufficient capacity to permit the use of this master control station on any pilot circuit at all commercial voltages.

The large polished brass handle gives a convenient grip to the average operator. It extends far enough from the case to indicate whether the station is open or closed. All parts are generously proportioned to reduce chances of breakage in rough or careless handling. The case is sprayed with a protecting paint to withstand submersion in water or the effect of acid fumes.

Recent Patents

Safety Brake for Mines; 1,561,348. Richard L. Mugford, Minersville, Pa. Nov. 10, 1925. Filed Feb. 12, 1924; serial No. 692,339.

Longwall Mining Machine; 1,561,481. Edward O'Toole, Gary, West Va. Nov. 17, 1925. Filed Feb. 14, 1924; serial No. 692,694.

Perforated Indented Screen; 1,561,632. Herbert S. Woodward, Carbondale, Pa. Nov. 17, 1925. Filed Feb. 27, 1924; serial No. 695,391.

Coal Temperature Indicator; 1,561,659. Robert P. Nichols, New Rochelle, N. Y., assignor to Federated Engineers Development Corp., Jersey City, N. J. Nov. 17, 1925. Filed Jan. 24, 1921; serial No. 439,444.

Plant for Washing Coal and Other Minerals by Means of Liquid Streams; 1,561,919. Antoine France, Liege, Belgium. Nov. 17, 1925. Filed Feb. 26, 1924; serial No. 695,262.

Mining Drill; 1,561,975. H. H. Des Roches, Butte, Mont., assignor of one-half to Frank F. Hayes, Butte, Mont. Nov. 17, 1925. Filed March 21, 1924; serial No. 700,958.

Mine-Car Stop; 1,561,987. Jozef Latoszewski, Plymouth, Pa. Nov. 17, 1925. Filed March 7, 1925; serial No. 13,743.

Carbide Lamp; 1,562,026. Karl Kovalchik, Bradley, Ohio. Nov. 17, 1925. Filed April 15, 1925; serial No. 23,210.

Treatment of Finely Divided Coal and the Production of Briquets; 1,562,876. Edwin Edser and Walter H. Beasley, London, England, assignors to Minerals Separation North American Corp., New York City. Nov. 24, 1925. Filed July 29, 1922; serial No. 578,477.

Coal Plow; 1,563,153. Daniel B. Brackett and Clarence F. Bloch, Whipple, West Va. Nov. 24, 1925. Filed March 18, 1925; serial No. 16,517.

Coal Breaker or Crusher; 1,563,173. John H. Doerres, St. Louis, Mo., assignor to Pennsylvania Crusher Co., New York City. Nov. 24, 1925. Filed May 8, 1924; serial No. 711,778.

Tight Case

This cast-iron box incloses the master switch mechanism so snugly that it seals out moisture and acid fumes. The switch is ruggedly constructed and generously proportioned to withstand rough treatment.

